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ESSAY ON DISEASES OF ANIMALS TRANSMISSIBLE TO MAN.

BY BORTH.

(*Continued from page* 397.)

Tænia Echinococcus.

IN its first form it is composed of closed sacs, which grow to the size of a nut, and sometimes to that of an orange. It usually lodges in the liver of pig, cattle, and dog, but establishes itself also in man. We have been assured that part of the population of Iceland have been attacked by it. The abundance of this parasite in that country is attributed to the want of cleanliness, and the number of dogs that they keep around them. The echinococcus becomes a tænia in this animal. The eggs pass out with the dung, and are left directly or indirectly on plants, which the Icelanders eat, for they gather for their food certain mosses, sorrel, dandelion, etc., from the midst of the plains in which stocks of sheep are pastured, and these guarded by dogs. The eggs are scattered everywhere on plants, and in the water. When we consider about different kinds of worms, and how many eggs a single worm produces, we can understand how it is that so few animals escape being invaded by them.

The dog is very frequently the host of an adult tapeworm, called the *Tænia serrata*, which has its cysticercus stage in the liver of hares and rabbits (*Cysticercus pisiformis*), and it is said that this parasite has on one or two occasions been discovered in the human subject.

Nemathelminthes (Round worms).

The round worms are parasites that occur, both in man and the domesticated animals, with even greater frequency than the flat or tape worms. These are somewhat higher up

in the scale of animal life than the Platyhelminthes, since they have, when mature, a mouth and a well-developed digestive canal. Of this class, a large number pass a part of their existence in the bodies of the various domesticated animals, but only a few of these are also parasites of man.

Trichina spiralis is the most important of these, because it affects the human being with a very serious disease called Trichinosis.

It was in 1832, a demonstrator of a course of anatomy at Guy's Hospital, London, Mr. J. Hilton, found in the flesh of a man who died of cancer, a great number of white bodies, which he took for vascular worms; the scalpel, during the dissection of the muscles, met with granulations, which blunted the edge of the instrument. He removed some of them, and took them to Professor Owen, of the British Museum, the celebrated Welsh naturalist, who recognised them as new worms, and gave them the name of Trichina, because they were as thin as a hair. He also added the name spiralis, on account of the manner in which they rolled up in their cyst.

Life history.—The adult is found in the intestines of different animals and man. It is a small worm, female $\frac{1}{8}$th of an inch, and male $\frac{1}{18}$ in.; the body is threadlike, and lies in a twisted fashion (hence named spiralis). The eggs are small, about $\frac{1}{1000}$ of an inch; the young hatch within the body of the mother. The larvæ are found in muscles in large numbers, where they have been carried in the blood stream. Once the embryo enters the muscle, it degenerates, and then a capsule is formed round it, and this gets harder, by deposition of calcareous matter; the young live in these cysts for years, but further development is impossible until the flesh is eaten by a vertebrate host, viz., man, pig, or rat. Having entered the new host, the larvæ then reach the intestines, where they become adult.

The sexual stage is always in the alimentary canal, and the asexual stage in muscles. They dwell in the intestines for five or eight weeks, and stay in the muscles for years. The sexes are separate.

Again, in 1860 the disease of trichinosis was discovered by a German pathologist, at a *post mortem* of a girl who had died after an attack of supposed typhoid fever, but young trichinæ were discovered in large numbers in her muscles, and also in her intestines. On inquiring into the case it was found that the first symptoms had made their appearance after the girl had partaken of some pork from a diseased pig, and that

other persons of the family were also taken more or less ill. Some of the remaining flesh of this pig was examined, and found to contain similar small worms; thus proving without a doubt the way in which human beings become affected with this parasitic disease. It will be gathered from this, that trichinised pork is the source of man's infection. But how does the pig become affected? It is generally believed, but this is not a certainty by any means, that the pig owes its affection to eating the flesh of trichinised rats.

Prevention.—First of all, should an organ infested with worms be considered diseased simply on account of their presence? We hesitate to say that, as long as these guests cause no disorders, and there is no pathological condition (for all animals in a wild state have these parasites).

Cleanliness is one of the preventatives of infection, and meat should always be well cooked.

Part III.

Diseases caused by vegetable parasites, which may be transmitted to man by means of meat or milk. All parasites do not inhabit the animal kingdom; some seek for assistance in the vegetable kingdom. The first one I wish to bring before your notice is that malignant and most fatal disease,

Anthrax.

This is a specific contagious malignant disease affecting all animals, even fishes and man, and is due to the entrance into the animal economy of an organism known as the Bacillus anthracis, which is rod-shaped, with square-cut ends.

Anthrax is a disease of man as well as of other animals, for man contracts the disease from the ox, which, perhaps, has been grazing in contaminated pasture or drinking contaminated water, but the human patient always, or nearly always, owes his infection to (1) eating the flesh; (2) handling the carcase of an animal dead of anthrax, namely, in skinning and cutting it up; (3) by drawing the spores into the lungs with the breath, as is sometimes the case. The spores may come in contact with the hairs of animals which have died of anthrax, and thus present in the wool, the wool-sorters become affected.

The usual mode of infection in man, is by the skin, known as "malignant pustule." This form usually affects butchers. From one to three days after inoculation there is irritation set up at the point of inoculation. About

a day later a minute vesicle, surrounded by a zone of inflammatory redness and swelling makes its appearance. The vesicles then form pustules, and these are followed by an extensive black scar. If these pustules be excised with the surrounding tissue, and the wound well cauterised with carbolic acid, there may be no return of the disease; but if the inflammation be allowed to go on unchecked until a considerable area is infected, the bacilli make their way into the blood-vessels and give rise to general anthrax. Tanners and wool-sorters are also liable to this disease, though they are more frequently affected through the lungs.

The bacillus makes its way sometimes into the alimentary canal, through the media of food and water. It is found that if the bacillus is taken into the alimentary canal, the acid contained in the stomach usually destroys it. If, however, resistant spores make their way into the alimentary canal, they may pass unharmed through the stomach and into the alkaline contents of the intestines. At the body temperature, they are then under very suitable conditions for development. They make their way especially through the damaged epithelial cells, which they gradually push to one side, into the deeper layers of the intestinal wall, into the lymph channels, or directly into the blood, giving rise to general anthrax.

Treatment for Malignant Pustule in Man.—Excise thoroughly and then cauterise well. Internally give acid carbolic and sodæ hyposulph.

Acid carbolic has a wonderful effect on the bacilli, killing them and decomposing them in a few hours. Professor Williams had a spleen full of these bacilli, on which he poured acid carbolic one night, and in the morning he was unable to discover a single bacillus.

I shall now go on to the next disease, which is *Actinomycosis*, which affects all animals that we have to deal with but is most common in the ox. It is due to a fungus, the Ray fungus, or Actinomyces.

Several authorities have tried to prove that the human disease is of animal origin by showing that it is more frequent in country people and those who are attending animals (such as farmers and farm labourers), but at the present time most pathologists incline to the view that there is practically no connection between human actinomycosis and that of cattle. As a matter of fact, only a small pro portion of the recorded cases have been in men that actually tended cattle, and it is even doubtful whether country people

are more frequently attacked than those who live in towns. Taking all these facts into consideration, it seems probable that human beings and cattle contract the disease in the same way, viz., by germs adhering to grains and pieces of straw, therefore it is worth while remembering that the chewing of a straw is not the harmless habit which farm labourers generally suppose it to be.

Foot and Mouth Disease, or Epizootic Aphtha.

This is a specific, contagious, and infectious disease due to a micrococcus, which, when introduced into a mucous membrane, causes this specific disease, but which, if introduced into the circulation, or the deeper tissues, gives immunity from the attack. The disease is undeniably transmissible to man, ruminants, horses, dogs, and swine. Very numerous epidemics of the disease among human beings from the use of milk from diseased cattle, have been noted at different times in this country and abroad. It is true, however, that milk from cattle suffering from the disease has often been consumed without any bad effect, and this may be explained by supposing that it is only when the disease is very virulent, or when ulcers are found in the udder or on the teats, that the milk is capable of infecting human beings.

Variola Vaccinæ (Cow Pox).

It affects the cow in a very mild form. It is a contagious, febrile, and eruptive disease, due to the presence of a specific virus (a streptococcus). After a period of incubation of 6 to 10 days, there is the development of an eruption on the surface of the mammary gland, which eruption passes through the stages of pimple, vesicle, pustule, and scab.

It seems to be established beyond doubt that cows become affected from the direct contact of the hands of the dairy-maids or milkers who are suffering from small-pox. But the eruptions of this disease, which occur in our domesticated animals and in man are not identical but only allied. Jenner observed that milkmaids took this disorder from milking cows affected with it, and were thereby exempt from small pox; so he originated the system of vaccination, to the great benefit of mankind.

Stomatitis Pustulosa Contagiosa of the Horse.

In the summer of 1876 several cases of a contagious disease presenting phenomena similar to those of variola, and chiefly

affecting the mucous membrane and external integument, were met with at the Berlin Veterinary College. Small nodules are found on the oral mucous membrane; they rapidly increase in number and size, extending to cheek, tip of tongue, and upper lip; the skin of the breasts and fore extremities are affected in some cases. Experiments as to the transmissibility of the disease by inoculation and infection were made on horses, cattle, sheep, goats, swine, dogs, and men with varying results.

A groom, and also a student, inoculated himself with the infection; there was manifested redness and unpleasant itching, and swelling of the part, the formation of a pustule, over which a yellow, brownish crust formed, which fell off in fourteen days, leaving a deep cicatrix. Other four gentlemen inoculated themselves without infection.

Diphtheria

is a specific blood disease, associated with sore throat of great severity, attended with extreme prostration.

It is rather doubtful whether diphtheria is transmitted to man from the lower animals. In 1883 an epidemic of diphtheria broke out at Braughling. The first cases were connected with a farm, on which the fowls were dying of a disease, apparently identical with the disease above-mentioned.

Dr. Turner also mentions that he has seen chickens and pigeons which have been inoculated with diphtheritic mem brane from a child's throat attacked as if with natural fowl diphtheria. He also mentions that at one outbreak, both the horses, swine, and foals were affected with sore throats immediately after the epidemic among the human beings.

Dr. Klein states that diphtheria has been transmitted from the cow to the human subject by means of milk.

Tuberculosis.

There are two good reasons why I have chosen tuberculosis, or consumption, as the last subject of my essay. In the first place, as we all know, the disease stands pre-eminent in prevalence and of mortality, both from the human and veterinary point of view.

The last decade has seen an infinitely greater advance in our effective knowledge of the disease than has been witnessed since the world began. The pathologists' energies have been roused as never before, and the nations are vieing with each other in a crusade against this terrible disease.

The disease has been well known since the most ancient times, and among the Jews, and in several continental states, the flesh of animals affected with tuberculosis has for many centuries been regarded as dangerous for human food. This fact is curious, when one reflects that it is only within the last thirty years that the medical and veterinary professions have been led to regard tuberculosis as a contagious and infectious disease. Indeed, so late as twenty years ago there were very few veterinary surgeons in this country who would have been inclined to admit that tuberculosis of cattle arose from infection.

For a great many years there had been manifested a growing feeling that the symptoms and natural history of the disease were best explained on the supposition of the presence of some parasite. So far back as 1722, a kind of prophetic guess had been made—in very vague fashion—that consumption was caused by animalculæ in the lungs. In 1850 it was demonstrated that little rod-like bodies or bacilli were to be found in diseased animals, which had died from tuberculosis. In 1863, 1865, 1868, it was further proved that these bacilli were really the cause of the disease, and also proved that tuberculosis was at least a disease that could be experimentally transmitted from one animal to another, or from man to man, by inoculating, or feeding with matter from diseased parts. We are now, I believe, on the threshold of great advances, which will revolutionise our treatment, as our conceptions of the disease have already changed. It fell to the lot of a Berlin doctor (Dr. Robert Koch) to reap the great fruit of his genius, skill, and marvellous perseverance in the incontrovertible discovery of the consumption-laden organism, the bacillus tuberculosis.

Tuberculosis is a specific, contagious, infectious, disease, due to a micro-organism, the bacillus of Koch, which is aerobic, and non-motile. It has rounded extremities. Found in the tissues of the body either single or two together, or still more common in the rosette form. Length varies 2·58μ to a little more than half the size of a red blood corpuscle. When stained it has a beaded appearance due to the spores they contain (4—8).

I shall only add a few words on the modes of transmission. Koch's discovery gave a new impulse to the question of the relationship between consumption and other forms of human tuberculosis, and the diseases of cattle, for he showed that the bacillus which is found in the diseased parts of man is identical with that found in cattle; in other words, he fur-

nished the conclusive proof that human and animal tuberculosis are one and the same disease. The way the germs enter the animal system is (1) by the respiratory tract ; (2) by the alimentary tract ; (3) by open wounds ; (4) artificially by inoculation.

1. Most important:—By infection.

2. Alimentary Canal:—We have here a special danger, more particularly to the infants of the human race, who may become infected by means of milk. Next we must ask ourselves about the flesh of tubercular animals, which is almost invariably consumed as food, and is not always thoroughly cooked. We are not yet in a position to say that ill effects result from this; but since such flesh is under grave suspicion, we should reject it, for we consider the risk of causing serious human disease should not be run.

"Gerlach, the discoverer of the transmissibility of tubercle through the digestive organs, as a result of most careful investigations decided that the flesh of a tuberculous cow is infectious, and is unfit for food, when there is decided disease of the lymphatic glands, when the tubercles are breaking up and becoming cheesy, and when tubercles are found in different parts of the body."

In the human subject infection may be through the media of handkerchiefs, bedclothes, &c., saturated with dried sputum. Lower animals by cohabitation, feeding, litter, bedding.

It has been demonstrated that earth-worms may preserve the bacilli within their bodies for several months, so that buried animals may be a source.

Inoculation.—Tuberculin is used to diagnose or bring out the symptoms of disease.

Prevention.—(1) Compulsory slaughter of diseased animals; but this could not be done without enormous expense, seeing that there are so many animals affected; and, if it was done, the disease is contagious from man to animals, as well as from animals to man. (2) Don't breed from affected animals, and all animals affected should be isolated. (3) Meat inspectors—qualified men—&c.

MYSTERIOUS DISEASE AMONG HORSES IN MOMBASSA, AFRICA.

Report by the Medical Officer of the Regiment (24th Bombay Infantry).

COMMUNICATED BY VETERINARY-MAJOR J. B. MILLS, J.P., PRINCIPAL OF BOMBAY VETERINARY COLLEGE.

THE regiment took fourteen horses; all except one died. This one was never sick or sorry.

Diagnosis.—It is supposed that death in all the cases was due to the tsetse fly, but no microscopic examinations or *post-mortems* were made.

Symptoms.—Enlargements first appeared in different parts of the body, generally of the size of a marble, soft in the centre, but fairly hard externally. After three or four days the joints began to swell from effusion of serum; also swellings under the abdomen and the scrotum. Fever then came on, temperature going up to 103 or a little more, and never returning to normal. The horses were off their feed, and lost flesh rapidly. In some cases running from the nose was noticed, the liquid being pale yellow. Occasionally convulsions. At times profuse perspirations were noticed. Death generally from ten days to a fortnight from the appearance of the first symptoms.

Treatment.—A few were treated with 20 grs. of quinine three times a day. In one case 12 grs. of arsenic daily, in three divided doses, but the disease had far advanced when this was adopted. Light food, diaphoretics, etc.

Stables, etc.—The floors were not prepared. The horses were in a shed to protect them from the sun. Jungle in the immediate neighbourhood.

Sanitary Conditions.—Good. Water: Well water, in some cases boiled.

The colonel commanding the regiment (24th Bombay Infantry) reports:—

> I would mention that I took my mare about thirty miles into the interior. She got ill for a few days, and then recovered so much that I was able to send her back to Mombassa. She was perfectly well a week after her return to Mombassa, when suddenly she displayed the same symptoms that Dr. Masani described, and died in a few days. I was away at the time, so I do not know what treatment she got, but I expect none, for at that time we had not seen an article in the *Field* that advocated arsenic.

Another gentleman writes, who has been to Mombassa:—

> I am sorry I am unable to say what the animals die from in Mombassa. I didn't see any cases, but it appears that the horse gets a severe cold, having a discharge from the nose, becomes languid and unable to work, refuses food, gradually becomes weaker and thinner day by day and dies. The cattle are carried off in a similar manner. I was told that animals fed on grass imported from India thrive, but immediately they are given grass cut in or about Mombassa, they begin to die off. I believe the country in East Africa is marshy for a certain distance from the coast, beyond which animals of all kinds thrive, and I believe there is a very good breed of milch cattle there. Drinking water is scarce in some parts and very dirty. As my stay was so short there, I could gather no more than the above."

EXPLANATIONS BY PHOTOGRAPHY.

BY M. H. HAYES, F.R.C.V.S., AUTHOR OF "POINTS OF THE HORSE," ETC.

Overreach.

WE are all aware that overreach occurs on the heels, quarters, or flexor tendons of the fore legs. The first two may be put together, for it is evident that a lateral deviation is the sole difference between the method of infliction on heels or quarters. I believe that up to the present no exact description has been given to account for the reason why overreach is sometimes on the heels and sometimes above the fetlock on the perforatus tendon. As my camera has accidentally solved this question, without any prompting from me, I shall put its results before my readers without further delay, except to explain that Figs. 1, 2, and 3 were taken by me to illustrate the manner in which a horse "gets away" after landing over a fence, which I have cut out from these pictures so as to economise space, and that these photographs are consecutive phases of movement.

Fig. 1 shows that if the horse cannot flex the knee of the fore leg upon which he has "landed" before its hind foot reaches it, an overreach on the back tendons will be the result. Fig. 2 tells us that the animal has escaped this danger, but that he is still liable to an overreach on the heels or quarters. We are glad to see from Fig. 3 that he has "picked up" the fore leg in time to escape all injury. It appears, therefore, that it is the act of flexing the knee which saves a horse when jumping from the more serious form of overreach, and that this accident occurs only when the flexor tendons are tense. This last conclusion seems to me to be confirmed by the practical fact that such overreaches seldom injure the metacarpal bones, which they would often do if these tendons were in a flaccid condition. Hunting veterinary surgeons will at once see that the cause of the difference in position of this wound is the "holding" nature of the ground.

Sprain of Suspensory Ligament and Flexor Tendons.

Figs. 4, 5, 6, and 7 show the descent of the fetlock of the leading fore leg of the canter or gallop, and are self-explanatory.

I may add that all these photographs were taken by me for "Points of the Horse," at an exposure for each, of $\frac{1}{800}$th of a second.

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to be taken from
the Library.

Photographs to illustrate over-reaching.—
(From Captain Hayes's "Points of the Horse.")
Second Edition.

Fig. 1.

Fig. 2.

Fig. 3.

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Photographs to illustrate Sprain of the Flexor Tendons and Suspensory Ligament.
—(From Captain Hayes's "Points of the Horse.")
Second Edition.

FIG. 4.

FIG. 5.

FIG. 6.

FIG. 6.

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APHTHA IN LAMBS.

BY JAMES MURRAY, M.R.C.V.S., CULLIN N.B.

ON the 9th February I was requested by Wm. Ross, Esq., Hilton, to examine his lambs as he suspected foot and mouth disease.

On my arrival I found the flock to consist of about 250, three parts bred, and in good forward condition, and about 60 of them in a pitiful condition, anxious to eat, but unable owing to the swollen condition of their lips. On closer examination I found the lips covered with scabs, the removal of which revealed a fœtid, cheesy-like excrescence, resembling a bad case of foul of the foot, and the tongue in the majority of cases normal.

I informed my client, who was greatly alarmed about his breeding ewes, that it was not foot and mouth disease, but without doubt a mouth disease probably due to some agent in the food, the exact nature of which I was unable to determine.

On inquiry I found the lambs were bred on the farm which is of fine dry soil and had been in the same field, and on the same food since November, 1896, the food consisting of hay, Swedish turnips, and a mixture consisting of oats, maize, decorticated and undecorticated cotton cake. I was at a loss to account for the symptoms, there being no change of food and no old dykes near by, but on further inquiry I found that the cotton cakes had been received in three lots, and that the third lot was begun on the 28th January and the shepherd noticed two affected on the 5th February, but thinking it was the result of the frosty weather paid little attention to them, but by the 8th February the outbreak, owing to the severity and acuteness of the attack, gave rise to anxiety.

I was now suspicious of the cotton cake, which was at once withheld with the result that only three others were affected. The outbreak seemed to me to be of such an uncommon and acute nature that I sent a specimen to Principal Williams, Edinburgh, who kindly replied that the disease was of a fungoid nature due, most probably, to spores in the food.

Seventeen of them being unable to partake of any sort of food were killed, and the others treated with a solution of sheep dip gradually recovered in about ten days, and there have been no more subsequent cases.

TETANUS AND "ANTI-TETANIN."

BY A. C. NEWSOM, ARMY VETERINARY DEPARTMENT.

THE following notes on a case of tetanus may prove of interest:—Squadron horse C 59, 6th Dragoons, was on the morning of January 26th reported sick. On examination, the case proved to be one of tetanus. The patient was removed to a quiet box and the ordinary treatment adopted. On the following morning all the worse symptoms were well established, and the case gave every evidence of being one of the most severe type. The temperature was just under 103°, the head and neck were elevated, the nostrils dilated, and the membrana-nichtans continually protruded over the eye-balls. The limbs were fixed wide apart, and the patient was only moved with difficulty. The muscles of the back and loins were hard, and the tail was carried in the characteristic manner. The breathing was much disturbed and the pulse rapid and feeble. Everything considered, the case gave evidence of the attack being of a kind to make recovery unlikely.

No time was lost in obtaining some Anti-tetanin. One gramme dissolved in 10 c.cs. distilled water was given in two injections at one interval of two hours.

The change in the condition of the patient at the evening visit was most marked. The temperature had fallen to 100°. The pulse had recovered tone, and the breathing was less disturbed. The jaws were capable of sufficient movement to enable the animal to suck a little soft bran mash, which the patient had been quite unable to do in the morning. At the morning visit on the 28th instant the patient was in much the same condition as on the previous evening. During the morning he became cast in the box and a temporary exacerbation of symptoms resulted, the temperature rising to nearly 102°, and the general symptoms being more severe; but by the evening he had again settled down and was doing as well as could be expected. No increase in the severity of the symptoms was observed. This time onward and after February 4th (the tenth day of illness) the symptoms became rapidly less severe till February 13th, by which date the patient was quite convalescent. Apart from the two injections of Anti-tetanin, the medicinal agents employed were chloral hydrate, bromide of potassium and belladonna; a dose of physic was given directly the animal was reported sick and before the jaws became completely fixed. Calomel

was given in doses of one drachm periodically during the illness, when indicated by the condition of the bowels.

As the patient was quite unable to eat during the first week or ten days, anything more solid than sloppy bran mashes, and, at first could only drink with difficulty, thin oatmeal gruel containing egg and milk were given twice daily from a tin vessel with a pipe attached to the bottom of it through which the patient readily sucked the gruel.

As in the case reported in November, 1896, the injection of the Anti-tetanin was in this instance followed by a marked improvement in the condition of the patient, arrangements were made to repeat the injections immediately any rise in temperature or other symptoms tending to show that the case was going backward were noticed—though this, as reported, was never necessary. It does not necessarily follow that recovery in this case is due altogether to the use of the Anti-tetanin, but it is quite certain that its administration was in the present, as in the former case, attended with sufficient benefit to the patient to make it worthy of further trial.

GASTRODISCUS SONSINOI (COBBOLD).

BY VETERINARY-LIEUTENANT J. MOORE, F.R.C.V.S., A.V.D.

POST-MORTEM examinations of the Indian Contingent at Suakin during the past year showed the above Trematode Entozoone in the intestines, sometimes in large numbers. The worm is pink in colour, irregularly discoidal in shape, and varying from about $\frac{1}{4}$ to $\frac{3}{8}$ of an inch in diameter. Reference should be made to page 397, "Neumann's Parasites of the Domesticated Animals," translated by Dr. Fleming, where it is well described. Towards the end of our stay at Suakin it was found in all *post-mortem* examinations. The intestines of a mule destroyed for Paraplegia contained hundreds, even thousands, in the large colon. The case during life showed symptoms of colic for several days, and particularly an irregular distention of the abdomen, Paraplegia supervened, and the animal was destroyed. The large colon contained no ingesta, but was contracted in parts, and dilated in other parts, from hosts of these Entozoa.

CYSTIC CALCULUS WEIGHING 17½ OZS.

BY A. BOYD, ESQ., F.R.C.V.S. MELROSE.

IT is of course well known that the mucous membrane of the bladder is very tolerant of foreign bodies so long as they remain aseptic, but that a horse should be the carrier of such an enormous calculus as the one, a photograph of which is appended, and live to the age of thirty-three years without manifesting any symptoms that might betray its presence, is, I think, remarkable. The horse in question was the property of a neighbouring farmer by whom it was bred. After sixteen years' hard work on the farm the horse was given to an old man, a crofter, for whom it worked well

though not very laboriously. It was never ill but once while in his possession and then had an attack of colic, for which I treated it, recovery taking place in a few hours.

Last December the old crofter died and David, as he called his old steed, being now thirty-three years of age, was destroyed.

Mr. F. Shore, M.R.C.V.S., made a *post-mortem* examination and found in the bladder a calculus weighing 17½ ounces. It was lying free in the organ and except that the mucous membrane and the muscular coat were atrophied somewhat on its floor, the bladder appeared quite normal. The "stone" is somewhat oval in shape and measures six inches in length and nine inches in circumference. A constriction divides it into two unequal parts and on one face are two irregularly rounded protuberances, apparently corresponding to the flow of urine

from the two ureters. The color is brownish yellow, the upper surface is smooth, but the smaller globe formed by the constriction and the under surface is rough, has a worm-eaten appearance.

Under a softish shell of recent deposit, which can be broken off with the nail, the internal part is hard as stone.

An eight ounce bottle is photographed as well to show the relative size.

Professor Macadam made an analysis, and reports the composition of the calculus to be carbonate of lime, and a trace of phosphates.

STRANGULATED SCROTAL HERNIA.

BY MR. W. L. GASCOYNE, NEW VETERINARY COLLEGE.

THE subject of this note was an aged entire shire horse. Every morning the animal was turned out into a field to water and to have a little exercise, and was then put into a box and not seen again until mid-day. When seen on this particular day he was found to be suffering from colic.

The owner treated him for some time giving two colic draughts containing chlorodyne and then a dose of physic. It was not until about seven hours afterwards that we were called in. We found the horse down constantly rolling, respiration greatly accelerated, pulse 85, and nearly imperceptible, body covered with sweat in patches. There was nothing very characteristic in his behaviour, it merely indicated an aggravated attack of colic. We looked for but failed to detect any signs of hernia, and I feel sure that if hernia was present at this time the gut could only have been in the inguinal canal and had not descended into the scrotum.

The treatment adopted was the administration of ½ oz. ext. cannab. indicus and the application of hot blankets to the abdomen. This was soon followed by relief and in a short time the horse appeared much better and looked like pulling through.

In two or three hours, however, the pain again commenced and on examining the scrotum at this period a large swelling was observed in the scrotum, on the near side. On manipulating this swelling, it was readily discovered that we were in presence of a scrotal hernia and that matters were complicated by its being a strangulated one.

The owner was made aware of the nature of the swelling and of the probable fatal issue in a short time unless the bowel could be returned. As he was unwilling to have the horse castrated and was not very favourable to surgical interference in any shape, taxis was resorted to. The horse lying at the time on the off side was secured by some

assistants, and while I manipulated the scrotum and its contents my principal, with his arm in the rectum, endeavoured to withdraw the incarcerated bowel, and was so far successful that I could feel it slipping away from the scrotum and soon the swelling almost completely disappeared; the animal, too, appeared relieved, but the ease which it now manifested might perhaps have been due to an ounce dose of chloral which had been administered before taxis was attempted.

We were now compelled to leave, but instructions were given as to subsequent treatment; the horse succumbed at seven the next morning. *Post-mortem* three hours after death revealed that about two feet of the ileum had passed through the inguinal canal into the scrotum and it was strangulated; it was indeed found impossible to completely pull the bowel back into the abdomen until after division of the ring.

The strangulated portion of the bowel was beautifully shown, being almost black, while the other parts of the bowel were normal or indeed anæmic, the line of demarcation between the two being quite abrupt as if a piece of string had been tied round it. I have very little doubt that had the owner consented to an operation the horse could have been saved, as the strangulated portion showed no signs of necrosis. It is interesting to note in view of recent discussions the prompt effect noticed after the exhibition of ext. cannab. indica, even in this case, where a fatal termination was imminent.

RUPTURE OF THE BOWEL FROM A CALCULUS.

BY MR. R. W. DAVIS, NEW VETERINARY COLLEGE.

On Saturday morning, the 6th of February, we were requested to visit a horse, the property of a firm of contractors, the messenger stating that there was no hurry as the horse was only a "wee bit grippit." On our arrival at the stable at 10 a.m., we learned that on the previous day the animal, an aged roan cart-horse, did not seem quite well. Still, he had done a good day's work, but at night had refused his feed. On the morning of our visit, the horsekeeper found the animal showing symptoms of pain. He was lying stretched out on his side, occasionally raising his head and looking round at the flank. When put up he stood quietly for a time, and then went down again. We found him at 10 o'clock presenting the same symptoms, the pulse and respirations a little accelerated, temperature 101. There was an occasional look round at the flank, and a curl of the tail, and when left to himself for a time, he quietly lay down and remained quietly stretched out. On examination per rectum, this viscus

was found to be empty and dilated, and deep in the abdomen the colon was felt, filled with not very hard fæces. An enema and a dose of oil and chlorodyne was given, and another dose left to be given in two hours if no improvement manifested itself. At 3 o'clock in the afternoon an urgent message was received for our attendance. The groom had given the second dose at 12 o'clock, and the patient then became very quiet for an hour or more. About 2 o'clock he commenced to be very bad, and we found him in a very alarming condition. The body is bathed in sweat, and as the box is small and ill-ventilated, the horse can scarcely be seen for steam. He is shaking from head to foot, pulse 90, artery at the jaw small, and vein distended, respirations greatly accelerated. The horse is not still a moment, goes round the box, and backwards and forwards, now and then making attempts at lying down, and sometimes going down, but is quickly up again.

Occasionally he strains violently, groaning the while; a hypodermic injection of morphia and atropia is given, and an enema. There is no improvement and in twenty minutes another examination is made per rectum and something abnormal can be detected through the rectum in another part of the bowel; it feels like a fold or rough flat place. The continual movement of the patient, however, renders it difficult to make anything like a precise guess as to what its significance may be.

The symptoms, nevertheless, point to some very grave lesion of the bowel, probably a rupture, and it becomes evident in the course of an hour, that death is impending. The horse died at 8 o'clock, p.m.

On making a *post-mortem* examination, the floating colon was found to be greatly inflamed over a patch about eight inches long and ruptured, and a calculus weighing 2½ lbs. was found free in the abdominal cavity.

The horse manifested none of the symptoms that are supposed to accompany colic from obstruction by these concretions. He did not lie on his back, he did not sit up like a dog and he did not back his hind part into a corner.

The abrupt appearance of symptoms of collapse—the shaking, failing pulse, etc.—probably coincided with the rupture of the gut and the falling of the calculus and fæces into the abdominal cavity. The principal interest in the case lies in the fact that this horse with a calculus firmly impacted in the bowel, showed only quite trivial symptoms of pain.

On sawing through the calculus a softish patch about the size of a golf ball was found in the centre, and in it a flat piece of lead, which doubtless was the point of departure of the concretion.

Editorial.

THE NEW PUBLIC HEALTH BILL FOR SCOTLAND.

THE editor of a veterinary magazine or newspaper would need to have all the eyes of Argus if he is to do his duty to the profession. The attempts made by those in high places to slight us, and the jealous efforts on the part of some of our medical brethren to ignore and pooh-pooh us, are so persistent and so crafty, that a veterinary editor dare not lay his armour aside for a moment. In the month of May last I wrote an editorial drawing public attention to a mean attempt on the part of the Corporation of Glasgow to deprive us of our rights and privileges in connection with the Public Health Bill for Scotland. In a memorial drawn up by that corporation for presentation to Parliament, by way of amendment of the Bill, it was stated that "the proposal in the Bill to make the inspection of cattle by medical officers contingent on the presence of a veterinary surgeon seems to have no justification either in necessity or expediency. Medical men first pointed out the special diseased conditions in cows which entail grave risk to the consumers of their milk, and it would be difficult, if not impossible, for the medical officers of many counties in Scotland to find a properly qualified veterinary surgeon." My readers will remember that I commented on this statement as follows:—"This is a deliberate and intolerable insult to our profession, and is an attempt to deprive us of our just share in the administration of the Public Health Bill. It means that we are mere useless excrescences on the social body and hindrances to the benevolent action of medical men; it unduly magnifies the importance of the one or two discoveries of the medicals, and totally ignores our many and valuable discoveries; it would lead the public to believe that the special study of disease in the lower animals is of less value than generalisations formed from the study of human diseases: this, of course, is illogical and absurd, but it is none the less pernicious." This and similar protests by my brother editors and others had considerable effect for the time, and stopped the glaring

injustice that was proposed. Great things were promised by those high in office, but the present state of matters is still most unsatisfactory. In the Bill for 1897, Clause 57 runs as follows:—

> If the medical officer of any district has evidence that any person in the district is suffering from an infectious disease attributable to milk supplied within the district from any dairy situate within or without the district . . . such medical officer shall, if authorised by a warrant . . . have power to inspect the dairy, and, if accompanied by a veterinary inspector, or some other properly qualified veterinary surgeon, to inspect the animals therein; and if, on such inspection, the medical officer is of opinion that any such disease is caused from consumption of the milk supplied therefrom, he shall report thereon to the local authority, and his report shall be accompanied by any report furnished to him by the said veterinary inspector or veterinary surgeon.

Now it appears to me that this is putting the cart before the horse, or, I might rather say, trying to make a cone stand on its apex instead of on its base. "If accompanied," forsooth! I suppose this means that the medical officer may have a veterinary surgeon tied to his chariot wheels—or he may not; it is for him, presumably, to decide, or perhaps, now that I think of it, for that important and highly valued functionary, the policeman!

There is, too, a certain element of comicality in the whole arrangement which must strike the reader who has any sense of humour. It will be observed that the medical officer is not to venture amongst the wild beasts unless accompanied by a veterinary inspector. I commend this as a subject for pictorial treatment by our comic papers; the picture that might be drawn, let us say by one of Mr. Punch's staff, of the medical officer venturing boldly and manfully amongst the fierce horned animals, whilst he holds fast by the veterinary surgeon's hand, would be most thrilling, and very funny. So, doubtless, would be his report on the condition of the animals.

But seriously, do our legislators not see the absurdity of the position? If milk is tainted with disease, then it is clear that the animal which gave the milk is tainted, and that the stream of infection will continue to flow until the fountain is discovered and stopped. Who is, then, the man that is to trace the infection to the offending animal? Is it the man who has made a special, perhaps a life-long, study of bovine pathology, or is it the student of disease as it affects merely the human subject? Surely there can be but one answer to this question. Surely everyone who has a head on his shoulders must see that the question is purely a veterinary

one and not at all a medical one—at any rate, in the first instance. It is the province of the veterinary surgeon to examine suspected animals and to report as to their condition to medical officers, giving, if necessary, samples of the infective produce of the animals; the medical officer may *then*, if he can, establish the connection between the human and the animal patient, but not till then. It is, therefore, imperative that we veterinarians bestir ourselves at once, to save not only our own credit, but our legislators' reputation for common sense. Clause 57 must be made to run something like this:—"If the medical officer of any district has evidence, etc., etc., he shall obtain a warrant whereby the veterinary inspector of the district shall have power to inspect the dairy and the animals contained therein, and the said veterinary inspector and the said medical officer shall examine and analyse the milk supplied by the said dairy, and, if they find that the milk is infected with disease-germs, they shall make a joint report to the local authority." No time ought to be lost; delays are dangerous, and our opponents may easily steal a march on us if we neglect our opportunities. I therefore commend this grave matter to the immediate and careful attention of all veterinary societies and all veterinarians.

ADVERTISING.

I BEG to direct your attention to a letter from Mr. Thatcher, solicitor for R.C.V.S., published on another page. From it the reader will learn that a certain advertiser whose name had been struck off the Register of the College, appealed to the Privy Council and that the Privy Council has upheld the decision of the College Council.

This is a matter of great importance and proves that neither the Registration Committee nor the Council have exceeded their powers.

A glance at the work done by the Registration Committee will at once prove that it has hitherto dealt in a most charitable and large-hearted manner with those who have transgressed in any way. When a member is reported for advertising or other unprofessional conduct, he is warned and asked to discontinue what is objected to; if he obeys there is nothing more said; if, however, he takes no notice of the warning and the matter is brought before the Council, in some instances another chance is given him, or he may defend himself before the committee, either personally

or by a solicitor. Nothing can be fairer than this. Every opportunity being given before extreme measures are resorted to.

Of course there is advertising and advertising and many methods are beyond the power of the Council to interfere or deal with. These are certainly reprehensible or even more so than the more open method through the medium of a newspaper.

Thus we find it stated that at certain horse auctions, Mr. So-and-So, M. or F.R.C.V.S., will attend as honorary veterinary surgeon, or that all horses have been examined by another So-and-So, or, tell it not in Gath, the cards of a travelling stallion are embellished and adorned with the name of a Member or even a Fellow. Passing through a small English town some time ago, I was amused at an announcement that Mr. —— M.R.C.V.S., could be consulted every market day from 10 a.m. to 5 p.m., the fee being 2s. 6d., to include advice and medicine. The same man I was told loaded his trap fairly well every morning with medicines of various kinds and did not hesitate to follow the example of vendors of quack medicines, to call upon all and sundry trying to sell his wares.

Then there is another method—viz., that of writing letters to the papers upon matters that should be brought before and discussed by the profession only.

And, again, the system of answering the questions of correspondents in daily and weekly papers goes on as bad as ever. The other day a veterinary friend of mine counted no less than twenty-five answers in one agricultural paper, these answers dealing with the matters of advice and the treatment of various cases of disease which the veterinary adviser had never seen. This is most reprehensible, and should be dealt with by the college as soon as possible, for, in reality, it is taking the bread out of the mouths of hard-working and deserving professional men.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

(*Continued from page* 111.)

Mr. SIMPSON: I now move "That the seal of the College be attached to the authority for the prosecutions."

Mr. FAULKNER seconded the motion, which was agreed to.

The PRESIDENT: I will now ask for a resolution regarding that portion of the Registration Committee's report which refers to the names to be struck off the Register.

Mr. SIMPSON: I beg to move, as a separate resolution, "That the names which are on this list shall be removed from the Register *en bloc*." I do that for the reason that I know the members have ample opportunity of informing the registrar of their addresses, and, more than that, I think it is a most serious responsibility for any member of this Council, or, in fact, for the Council itself as a body, to undertake the alteration of a man's address without his consent. I therefore move that these names mentioned in the report be removed from the Register *en bloc*.

Mr. MASON: I beg to second that.

Prof. MCFADYEAN: I am sorry Mr. Simpson, unconsciously, I have no doubt, has entirely misrepresented the nature of the remarks I made a minute ago. I did not for a moment suggest that we should alter the address of anybody. I gave what I am confident is the correct address of one gentleman, and I thought the course which our secretary would take would be to address a letter to him there, and that the same would apply to the other two gentlemen. But if the Council, although this man's address is known, desire to inflict a fine of £1 on him, I object.

Mr. DOLLAR: May I point out also, before this resolution is proceeded with, that there is not merely the question of a fine of one guinea inflicted upon these gentlemen who are so unfortunate as to have removed from their addresses and not received our registered letters, but a very grave slur is cast on any such gentleman who may happen to be called upon to appear as a witness in any court of law? He is exposed to the risk of being asked, "Is it not a fact that your name has been removed from the Register?"

The PRESIDENT: May I point out that he can be restored again in five minutes?

Mr. DOLLAR: That is not the point. The prejudice raised by that question can never be completely removed from the minds of a jury. A man may say, "Yes, it is quite true I have been removed from the Register, but it was only through a technical error, and my name has been restored." But such a slur would be cast upon the man by the mere question being asked, that it would appreciably depreciate him in the minds of the jury. Another point I wish to draw attention to, is, that it seems to me a most peculiar way of carrying out so very serious a function as this, to merely read the surnames of the persons who are to be removed, inasmuch as it may very well be as in the case of Mr. Coleman, that more than one person of that name is on our register.

The PRESIDENT: It has all been published in the journals.

Mr. DOLLAR: It is at this meeting that we take the step by which the names are removed from the register, and whatever may have been done in connection with the journals, I think that at least in taking so serious a step, we should take every precaution to be technically correct. If we were, by want of technical correctness, to strike the wrong man's name from the register, we would, of course, be exposing ourselves to very serious penalties.

Vet.-Col. LAMBERT: With regard to Mr. Adams, I move the deletion of his name because he is in one of my own departments now, so that it is necessary for me, in a certain sense, to defend his interests. I think there is a great deal in what Mr. Dollar says, and I would ask whether something to ameliorate the hardship pointed out could be done in this way: could not a supplementary list be put at the end of the register in order to prevent anyone in a court of justice being persecuted, saying that the following gentlemen have been removed from the register because they have not notified their address, and for no other reason? Otherwise, it is a very great hardship for a man. I will take Mr. Adams' case. He had, up to recently, been in

America for four or five years. Naturally it did not occur to him, I suppose, to notify his address, in fact it is not known to a very great number of the profession that they should do so. If he had been in America, and in a court of justice giving evidence, and he had been told that his name was not on the register of the R.C.V.S., that would have prejudiced any jury and judge. Therefore, I ask, could not something be done in the register itself to point out for what reason the names were removed, and that it was for nothing discreditable to the men?

Professor DEWAR: Before this matter is settled, I should like to refer to page 8 of the Register in connection with the Veterinary Surgeons Act, of 1881. It will be seen that section 5 is the section concerned with the getting out and maintenance and correction of the Register of Veterinary Surgeons. Sub-section 4 says, "Where the Registrar has reason to think that any person registered has ceased to practise,"—that is the initial step. I am prepared to testify here that I have been in communication with this gentleman within the last month, and that his address is St. Andrews.

The PRESIDENT: Let me point out that that has nothing to do with us, if the gentleman will not answer the letter sent to him.

Mr. FRASER: Will you read the whole paragraph, please?

The PRESIDENT: These gentlemen will not take the trouble to answer the letters. The names were published in the Veterinary journals, and again they took no notice; and the fact that they write to somebody else is no evidence to us. We do not know they are practising.

Professor DEWAR: My evidence will be taken in the highest court in the land, and surely it will be taken by the Council of the Royal College of Veterinary Surgeons.

The PRESIDENT: These gentlemen have not conformed to the rules and regulations of the College, and now it is for you to say whether they shall be struck off or not.

Professor MCFADYEAN: Is my amendment standing?

The PRESIDENT: No, there is no amendment because there is a new resolution. Since then we have confirmed one portion of the Registration Committee's report, and left the other unsettled. It is quite open to you to move an amendment to the resolution, that they now be struck off *en bloc.*

Professor MCFADYEAN: I ask you to be good enough to put the amendment I have already moved—"That these three gentlemen, Fairbairn, Coleman, and Adams be deleted from this list.'

Mr. DOLLAR: I second that amendment.

Mr. SIMPSON: Before the vote is taken, would you be kind enough to let the members know exactly what has been done in these cases? I think they will then be in a better position to know how to vote.

Professor MCFADYEAN: I suppose I shall be allowed to discuss this.

The PRESIDENT: No, sir.

The SECRETARY: Section 5, sub-section 4, reads as follows:—"Where the Registrar has reason to think that any person registered has ceased to practise, the Registrar may send by post to such a person a notice inquiring whether or not he has ceased to practise, or has changed his residence, and if the Registrar does not within three months after sending the notice receive any answer thereto from such person, the Registrar may, within fourteen days after the expiration of the three months, send him by post, in a registered letter, another notice referring to the first notice, and stating that no answer thereto had been received, and if the Registrar does not within one month after the second notice receive any answer thereto, such person shall, for the purpose of the present section, be deemed to have ceased to practise, and his name may be removed accordingly."

Professor McFADYEAN: "May be!"

Mr. SIMPSON: I should like to ask whether the Secretary has complied with all those conditions.

The PRESIDENT: All those conditions have been carried out.

Veterinary-Colonel LAMBERT: May I say one word, Sir?

The PRESIDENT: I think not, you have already spoken.

Professor PENBERTHY: I have proposed a direct amendment.

The PRESIDENT: This is a direct amendment.

Professor PENBERTHY: No, I have proposed that the names of two other gentlemen be deleted. I have a legal right to do this.

The PRESIDENT: It will be a more convenient course to ask Professor McFadyean to add those two names to the three he has already mentioned.

Professor PENBERTHY: That would not meet my purpose.

Professor DEWAR: Would you allow me to ask the solicitor a question?

The PRESIDENT: No, you have already spoken. I will now put Professor McFadyean's amendment.

The amendment was then put and lost.

The PRESIDENT then put the original motion from the Chair, "That the names be struck off *en bloc*," which was agreed to.

The PRESIDENT: There is one more matter in connection with the Registration Committee I wish to bring before you. I ask your attention to this as it is an important matter. I will ask the solicitor to read the letter received from the Privy Council with regard to Mr. John Howard.

The SOLICITOR read the letter received from the Privy Council enclosing a petition from Mr. John Howard against the decision of the Council striking his name from the Register, and asking for any observations from the Council on the subject.

The Council directed that a letter should be written, the draft of which they considered and approved, upholding their action in the matter.

Examination Committee.

Mr. MULVEY read the report and moved its adoption. The report stated that the Secretary had submitted to the Committee a letter from Messrs. Moorhead and Wood, Solicitors for Mr. Albert McDowell, for an explanation of the action of the College with regard to his examinations and the Committee recommended that the matter be referred to the College solicitor.

A letter had been read from the Town Clerk of Edinburgh as to the refusal of the College to admit certain students to their first professional examination on the grouud of non-completeness of their certificates of examination in general knowledge. Having regard to the fact that these certificates had already been before adjudicated upon, the Committee made the following recommendation to the Council: "The Committee regret their inability to accede to the request made in the letter. The Committee had also considered what regulations should be made with regard to instructions to examiners in Class D examination, and some question having been raised as to whether or not such examination could be divided in the same way as the final examination in the three-year-course, the following resolution was passed: "That the examiners in Class D be instructed to conduct the examination as a divided one." The Committee also passed the following resolution: "That the examiners in each section of Class D shall, as far as possible, conjointly examine each student," and it was also resolved: "That the examiners should adhere to the existing bye-laws on the subject of this examination, and that the Secretary should be instructed to forward to each of the examiners a copy of bye-law 72, and such part of the second schedule of the bye-laws as refer to Class D examination."

Mr. SIMPSON seconded the motion for the adoption of the report.

The PRESIDENT: The report is now open for discussion if any member has any observations to make upon it.

Professor MCFADYEAN: I have a few observations to make with regard to what appears to me a point of very great importance. Those members of Council who were not present at the Examination Committee yesterday are perhaps not aware that it was then discovered, or, at least, for the first time brought to the knowledge of a considerable number of those who were present, that there is no bye-law directing what is to be done in the case of a student who fails in his Class D examination. There is a bye-law which says that a student who fails in his A, B, or C examination shall, during the interval between his rejection and his next examination, attend a veterinary college; but nothing is said about Class D. Some of us thought that this was not an accidental omission, but that it was an intentional omission, leaving it open to the Council to make later arrangements. Some gentlemen have said that it was an intentional omission, the idea of the Council at the time being that it was not necessary to say that the student who was rejected could come back back—that it would follow as a matter of the course. Still another member of the Committee said that it was the deliberate intention of the Council that the student who failed in his D examination, no matter how ignominious that failure was, could not be asked to go back. I think it is well that every member of the Council, and the outside public also, should know that an attempt is going to be made by a sort of side-wind to introduce a regulation which will press very hardly upon veterinary students. Under the old regulation, a student who presented himself for his final examination, and satisfied the examiners that he possessed a sufficient amount of theoretical knowledge, was not compelled to go back to college again, and he was not subjected to a re-examination in theoretical knowledge. He had to be re-examined in practical knowledge also. There are some members of Council who tell us that it was the deliberate intention of the Council who framed the regulations relating to the new system that that was no longer to regulate the course of the final examination, that the student was not to be allowed to separate the examination into the theoretical and practical. Needless to say, that will make the examination immensely more difficult, and I think that we will need to carefully consider whether, after having added one year to the curriculum and imposed examinations which are decidedly of a higher standard, we are going to make more difficult an examination which, as conducted up to now, has entailed the rejection of nearly 50 per cent. of the candidates.

The PRESIDENT: Professor McFadyean has spoken on the report, but we have no amendment yet.

Professor PENBERTHY: I should like to speak on the same point.

The PRESIDENT: Do you propose to move an amendment? It is quite open to you to discuss the report.

Professor PENBERTHY: I should like to speak on the same point as Professor McFadyean, and after I have discussed it, if I think it is necessary to move an amendment perhaps I shall do so. I may say as a member of the Council, and of the Examination Committee, and of the Conference through whose work the alteration in the examination was brought about, I am of the conviction that the D examination which was then instituted was intended to be carried out in two parts, as the C examination is at the present time; and that the only reasons for altering the number of examiners were, first, the one of expense, and the other was the view we took that one examiner going through the written, the oral, and the so-called practical, with the same man, could form a much better opinion of his abilities for practising as a veterinary surgeon. In that lay the reason, as far as I can remember it—and my memory seems to be clear on the point—why the one set of examiners should examine the student all through. I do not believe for a moment that at that time, when

we were not quite sure about the four-years'-course, and what was the cost, and when we were fully convinced that practical knowledge could not be gained altogether at any of the teaching schools, that the Council at that time would have adopted any such view as is promulgated here to-day, and was yesterday at the Committee, that the failure at this examination should entail the return of the student to the College for six or three months, as the case may be, or for another session, with the consequent expense and the consequent failure to get the knowledge which you say, or which the Council at that time at any rate, did very forcibly say, could not be got at any of the teaching schools. To do their best to make up for that, they had in class examinations to suggest: "You are not sufficiently practical, you can go into a private practice where you can get some practical knowledge." I maintain that that was the prevailing view of the Council at the time these regulations were passed. I shall not move an amendment. I will support the proposition.

Mr. KIDD: My recollection is quite the opposite to that expressed by Professor Penberthy, and I think many members will support my views when I say that at the time the examiners were appointed the question of the practical examinations was discussed, and the examiners were appointed for the oral only, and nothing was said about the practical in the D examination. I think it would be an extreme measure on the part of the Council to divide that last examination again—for one reason, if for no other, on the score of expense to the College.

Professor MCFADYEAN: I should like to move an amendment if I am not out of order.

The PRESIDENT: You have had an opportunity of speaking before.

Professor MCFADYEAN: If you rule that, sir, I must submit.

Vet.-Capt. BUTLER: May I protest against these long-winded arguments on this subject which bear at the present time no result? The whole of this question will have to be re-argued on Professor McFadyean's motion for the alteration of the bye-law. At the present time it simply means that the two sides are airing their views on the question for the benefit of those who are supposed to be familiar with it.

Mr. LOCKE: There is one point in regard to the report that I think the attention of the Council should be called to, and that is the letter from the Town Clerk of Edinburgh with regard to those students who have not been allowed to go up with divided certificates. A good many members do not know the action which the Town Clerk intends to take with regard to the matter—viz., a legal action.

The PRESIDENT: There is no legal action commenced, there is an intimation that a legal action may follow.

Mr. LOCKE: There are members here who do not know anything about that, and I think it just as well that all the members of the Council should know.

The PRESIDENT: Am I to understand that you would like that letter to the Council to be read?

Mr. LOCKE: I think the letter ought to be read to the Council. It is a matter of very great moment, and I wish to move an amendment to the report with regard to that portion which bears on the question.

Mr. SIMPSON: Are we to leave this subject now? I take it the members will either vote for or against.

The PRESIDENT: I have allowed this discussion because an amendment was not necessary. These gentlemen could argue and persuade members of Council to vote for or against the motion.

Mr. MULVEY: If the report is going to be discussed, had we better not take it clause by clause.

Vet-Col. LAMBERT: That would be the best course.

Mr. LOCKE: I intend to move an amendment.

The PRESIDENT: You have not done so, and you have already spoken.

Mr. LOCKE: I was only waiting until the letter from the Town Clerk was read.

The PRESIDENT: Then let us have your amendment.

Mr. LOCKE: Read the letter first.

Mr. SIMPSON: I propose that the report be taken paragraph by paragraph. There are paragraphs we are unanimously agreed about, I take it, and there are others we disagree about.

Mr. FAULKNER seconded the proposition, which was agreed to.

The first and second paragraphs of the report were adopted without discussion.

Mr. MULVEY then moved the adoption of the third paragraph dealing with the letter from the Town Clerk of Edinburgh.

Mr. WRAGG seconded the motion.

Mr. LOCKE: Before that is put, I beg to propose that the letter be read to the Council.

Vet.-Col. LAMBERT: I will second that.

The PRESIDENT: You have no objection to that, I suppose, Mr. Mulvey?

Mr. MULVEY: No, sir.

The PRESIDENT: Then I will ask the secretary to read the letter.

The SECRETARY then read the letter from the Town Clerk of Edinburgh to the effect that he had been instructed by the trustees of the Dick College, with regard to the refusal of the Council to admit certain students to their first professional examination on the ground of the incompleteness of their educational certificates and asking that they might be admitted on the ground that they had entered the College before the passing of the bye-law in July last, and on the faith of certain statements made on behalf of the Council to the secretary of the Dick College.

Mr. MULVEY: I should like to point out that these certificates were presented to the Examination Committee held on the 2nd of December, and that they were then very fully considered. The opinion of the solicitor was taken on each one, and the committee decided that it was impossible to accept them.

Mr. LOCKE: With regard to this matter I think there is no doubt you will all agree with me that the Council have placed themselves in a very awkward position. During the last two or three years we unfortunately have had to fight, and we have lost the day. I know it is not legal according to our new bye-law to accept these students, but I do not see why this Council could not for once by resolution allow these men to go up for their examination, and not only allow these six men, but all those men who entered College previously to June, 1896. I think it would be doing the right and proper thing if we did that, it would not only do justice to the students, but place ourselves in a better position before the veterinary profession. There is no doubt in my mind that if an action at law is brought against this Council, legally we should be perfectly right: but you all know that a judge and jury will not only look at the legal point of view, but will look at the equitable point of view. I am afraid we should find ourselves hardly in the right place, and that probably the judge or jury would give a verdict against us. I think it would be right and fair if we could see our way to accept all these students who entered the College with the perfect understanding that they would be allowed to present themselves with a divided certificate and go up for the examination. I beg to move that all those students be accepted who entered the College before June, 1896.

The PRESIDENT: You move an amendment to the motion for the acceptance

of this paragraph of the report, and you ask this Council to reverse the decision of a previous Council?

Mr. LOCKE: Yes. At the committee meeting yesterday the resolution that was come to was not unanimous.

Mr. MULVEY: May I point out that this question has been before and decided by a previous Council meeting, and that it would be necessary to rescind that, before you can open the question again?

The PRESIDENT: At present Mr. Locke is perfectly in order in moving an amendment that the clause be not adopted. We will take the amendment first.

Vet.-Col. LAMBERT: I will second Mr. Locke's amendment, not because I wish to do anything against the Council, but simply for the sake of the safety of the Council that it should be on sure ground. The question appears to me to hinge on this: Did the President lead certain authorities in Scotland to believe that these certificates would be accepted? ["Yes."] If he did not, then I should have no hesitation in voting that the previous resolution of the Council be adhered to; but, if he did, I think there is some ground for dispute, and that we might be in a perilous position in a court of law.

Professor DEWAR: It is my duty to make a few observations in regard to this matter. As to the letter from the Town Clerk of Edinburgh on behalf of the trustees of the Dick College, the matter has never been brought before the Council in the same way as it has been to-day, and I think there is no one here but will agree with me that these students are in a very awkward position. Nor, I think, will anyone be prepared to affirm that these students have done anything to bring themselves into ihis position. If they are in a difficult position, they are in it through no fault of their own. It is due more to the fault of the officials of this College, and to the Council itself, than to anyone else. ["No."] Excuse me. There is no use going over old ground, and I will try to be as brief as possible. You know that the then President of the College—

Mr. SIMPSON: Name, please.

Professor DEWAR: Mr. Hunting—wrote on the 18th of October, 1894, a letter saying that divided certificates would be accepted. This was acted upon in good faith down to the end of November, or some time in November, 1895. There was no doubt expressed, as far as we are aware, but what the certificates would be accepted, and these students entered, as you will observe, at the end of October, 1895, on that understanding. Then at the end of November, 1895, the question was again raised whether in the case of those students who had entered the College those certificates should be accepted, as there was likely to be some difficulty about it. There was some correspondence between the secretary in Scotland, and the secretary here, and the then president, Mr. James Simpson, called a special meeting of the Council. On the 20th of December, 1895, a letter was written by the secretary of the Council, Mr. Hill, to the secretary of the Dick College in connection with the matter, enclosing the following resolution:—"That in the opinion of this meeting the certificates comprised in the first schedule to bye-law 52 are a sufficient educational test, irrespective of the mode in which such certificates are obtained." Now this resolution was passed after these men had entered the College. They had entered the College, however, on the strength of this letter, and it will not do to enter a technical quibble and say that it was not meant to take two separate certificates, because this meeting was called for the very purpose of dealing with them as such, and they were accepted as such as recently as the July examination from fresh men going up for their first professional examination. I do not think any member of the Council would deny that the authorities of the College with which I am connected were in error in placing implicit faith in

these documents which they received from this Council. I hold, and I think no one here will deny it, that it is through the action of this Council that these students find themselves in the difficult position in which they are now. I do not wish to make an appeal to your generosity in any way, I only desire to ask the Council to do justice to these students. They surely must look to the Council to assist them in the difficult position in which they find themselves at the present time. As far as I know, I do not believe that any member of the Council sitting at this table would act in his individual and private capacity in the way the Council is acting in connection with these men, and I do not believe that the Council will do it either. Did Mr. Locke move an amendment?

The PRESIDENT: Yes. The amendment is that this clause be not adopted. Supposing that is carried, it is for you to say what you will do with this letter.

Mr. WARTNABY: I should like to ask the solicitor whether, in the event of this request on the part of these gentlemen being rejected and they do take legal proceedings against this Council, there is any probability of their winning their case.

Mr. THATCHER: I beg to say that I have made it an invariable rule in my practice never to guarantee a verdict.

Mr. WARTNABY: I ask for your opinion.

Mr. THATCHER: My opinion of the bye-law is this. I recognise every word that Professor Dewar has said, and nobody can sympathise with these young men more than I do; but it is my duty to say that if they were to be admitted we should be infringing the bye-law. I beg to point out to you that there is another result, viz., that some men have already obeyed this bye-law, or this injunction, and I am told that they have suffered what I may call damage in consequence. I have been given to understand that one or two gentlemen have abandoned their profession in consequence of this bye-law, and they may have adopted another. What are you going to say to any claim that is brought forward by them? I am quite aware that it is a matter of expediency, but it is a matter for your consideration. Unfortunately for these gentlemen, I am afraid that the resolution which has been already come to by the Council, with regard to their certificates must stand; and if we have done wrong we shall have to take the consequences.

The PRESIDENT: I will now put Mr. Locke's amendment, which was seconded by Vet.-Col. Lambert, "That the clause be not affirmed."

The amendment, on being put, was declared to be lost, 3 voting in its favour.

The motion that the clause should stand was then put and carried.

Mr. MULVEY then moved the adoption of the fourth clause with reference to the consideration of what regulations should be made with regard to instructions to examiners in class D, etc.

Professor DEWAR seconded the motion.

Professor MCFADYEAN: If that is to be taken as a correct record of what transpired at the Committee meeting yesterday I have no objection, but if the adoption of that even temporarily ties our hands with reference to the question of the conduct of the examination, I object to it, and move that that paragraph be not accepted. It deals with the point which we all recognise requires settlement. It cannot be held that it has already been sufficiently discussed. Many here are asked to vote upon it without having heard any discussion at all. But inasmuch as my motion will raise it before an examination can be held, I think it is better that we should not commit ourselves on the point, I beg to move that this paragraph of the report be not adopted.

Professor PENBERTHY seconded the motion.

Mr. SIMPSON: I wish to speak upon the original motion with regard to the way that this D examination should be conducted. We heard in the earlier part of our deliberations to-day reference made to this subject by Professor MacFadyean, and he told us what was in the minds of different members of this Council with regard to the interpretation of what the then Council intended should be done. As one who took part in the framing of those regulations, I am sorry I must entirely disagree with the opinion expressed by Professor McFadyean. To my mind, there is not the slightest doubt that the Council of that time—and I venture to think that the Council of the present time will agree with the view—took the view that there was no intention whatever of making this a divided examination. Never did it enter into the mind of one member of Council, I venture to say, who took part in the framing of these regulations, that there should be a divided examination.

Prof. PENBERTHY: I beg to say that at the Committee meeting yesterday our President expressed the opinion that there should be. I have done so to-day, but I do not speak for myself. I simply speak for the President.

Mr. SIMPSON: Of course, in the face of such a statement as that I withdraw what I said; but the impression on my mind was so strong that we were pretty unanimous about it at the time those regulations were issued, that I, perhaps, overlooked the fact that you had spoken against it. Now, sir, what is suggested? Let us take the Class C examination first of all. There is a certain test to be applied to the students—written, oral, practical, and otherwise. Here is the practical portion of the C examination under the four years' system: "The recognition of defects in stables, recognition of defects in harness; recognition of defects in forage, and a general acquaintance with animal conformation, especially as regards the horse, his points, marks, height, breed, colour, age, adaptability for work." It will be in the minds of all of you that when we were discussing how this was to be conducted, Professor McFadyean suggested that this examination should be conducted in a room; and we, I think, after a time, convinced him at any rate that it would be better conducted in a loose box than in a room, and that was agreed to. Now we come to the D examination. A certain amount of practical work is to be done there: "Examination as to soundness, operations, obstetrics, meat inspection." Now, gentlemen, is it wise in these days when the profession has so plainly spoken out on the question of divided examination or divided certificates—I was coming to the divided certificates—I say, is it advisable? and I venture to think that those eleven gentlemen who pledged themselves to undivided certificates will as staunchly support the idea of undivided examinations. For the reasons which I have given I do hope the Council will not make this a divided examination. To allow the student to pass the theoretical portion of this D examination, and then for the College to say: "We have done with you now. go and get your practical work where you like," is to my mind not the correct thing. It has been stated by a representative of the College that they cannot get it at College. Why? Because they choose to have a summer session, instead of allowing the students to go out in the summer.

Professor PENBERTHY: I rise to a point of order and privilege. It has been stated that I, as a representative of the College, said that practical knowledge could not be got at College. I have never said such a thing. I have said that it was my opinion that that was the prevailing idea, and the very frequently expressed one when these regulations were drawn up.

Mr. SIMPSON: What is your point of order?

Professor PENBERTHY: That you made a mistake.

The PRESIDENT: Professor Penberthy is simply correcting a mistake of yours, so far as he was personally concerned.

Mr. SIMPSON: I will withdraw that and say, a professor at a veterinary college.

Prof. PENBERTHY: That does not satisfy me at all.

Mr. SIMPSON: Then I will say a member of this Council.

Prof. PENBERTHY: That does not satisfy me either. The fact you stated is wrong. I have never expressed the opinion that you have just stated. The opinion you attributed to me was that the College did not and could not provide sufficient material for gaining the practical knowledge necessary to get the diploma. I said in my former remarks that that was an idea prevailing in the profession and in the Council at the time those regulations were drawn up.

Mr. SIMPSON: I beg your pardon, then, and I will withdraw it unreservedly. I thought I heard you say so. I certainly did hear a voice come from that corner, and I thought it was you. Then, sir, I will not detain you any longer. I thing, at any rate, I have said enough to convince the members of the Council who were not present at the meeting of the Committee yesterday, to hear the various arguments for or against, that it would be undesirable to divide this D Examination.

Vet.-Capt. BUTLER: I should like to say one word in support of the amendment, that this paragraph be deleted from the report. There is, at the present time, hanging on the board a notice for the alteration of the bye-law, and that will come on for discussion at the April meeting. No examination can take place until more than a month after that meeting, and at that meeting we shall have the pleasure of hearing all these gentlemen repeat the arguments we have heard so ably put forward this evening. I therefore support the amendment, in order that we may, after we have gone over the arguments again, and come to a conclusion, give our directions to the examiners for the examinations.

Mr. MULVEY: I certainly do not agree with the argument advanced by Captain Butler, because that will entail the whole of the work of the examination Committee being done over again. If you carry this clause now, it is done with, but in the event of Professor McFadyean's new motion being carried, then, of course, you could go over it again, but there is no occasion to do the work twice.

Professor MCFADYEAN: I object to a misrepresentation of my motion.

Mr. MULVEY: I am simply saying that it will necessitate doing of the work of the Examination Committee twice, whereas, if you carry this now, the Examination Committee will not have to do the work over again.

Professor MCFADYEAN: I object to that statement entirely.

Mr. MULVEY: I want to point out to you the difference between this Class D Examination and the examination as carried out in Class C. In the Class D Examination the subject of pathology is taken from it, and materia medica: now, as it is intended to be carried out it is a clinical examination, and how you are to divide that into two portions I certainly do not understand. The examination has to be conducted in a stable or in a yard in the presence of the animals both conjointly.

Professor MCFADYEAN: The written.

Mr. MULVEY: I cannot speak about the written,

Vet.-Gapt. BUTLER: What about the paper, is that clinical?

Mr. MULVEY: I am not speaking about the written. I simply pointed out that the examination now is simply a clinical oue; and if you are going to divide it into two portions of that description, you will have nothing of it left.

Professor EDGAR: I should like—although I very strictly agree with the interpretation Mr. Simpson and Mr. Mulvey have placed upon the intentions of the Council with regard to the conduct of the D Examination, being a co-worker with them in framing it—to ask Mr. Mulvey if he would consider the advisability of withdrawing that clause, on account of putting the Council once again in a very ridiculous position. Owing to Professor McFadyean

having determined to bring forward his motion next month, we stand in the position of having probably to rescind that which the Council do to-day: and if Mr. Mulvey will kindly withdraw that clause, we shall not be committed to any action. We shall be able dispassionately to discuss it without having to rescind that which we resolve upon to-day.

The PRESIDENT: The amendment by Professor McFadyean, seconded by Professor Penberthy, is "That the clause relating to the D Examination be deleted."

The amendment was then put, nine voting for and nine against.

The PRESIDENT: As the voting is equal the matter is in my hands, and I shall support the commitee by giving my casting vote in favour of the clause standing. You will have an opportunity of discussing it again at the next Council meeting.

On the motion of Mr. MULVEY, seconded by Mr. KIDD, the final clause of the report was adopted without discussion.

Finance Committee.

The SECRETARY read the report of the Finance Committee.

On the motion of the PRESIDENT, seconded by Mr. WRAGG, the report was adopted, with some slight amendments, and cheques were ordered to be drawn to meet the liabilities.

The PRESIDENT: The treasurer asks permission of the Council to alter the date of the financial year. He thinks it would be far more convenient for making up the accounts if we make our annual statement to the end of April 30th instead of March 31st. The matter was carefully considered by the Finance Committee this morning, and it was decided to ask that our financial year should be altered as I have mentioned.

On the motion of Mr. MULVEY, seconded by Mr. KIDD, this was agreed to.

Jubilee and Bursary Committee.

The SECRETARY read the report. The committee recommended that the funds be invested, and they also reported to the Council that the tablet had been placed in position in the hall of the College by Mr. James Simpson.

The PRESIDENT: As chairman, I beg to move the adoption of the Jubilee Memorial Committee's report, and also "That the thanks of the Council be accorded to Mr. Simpson for his handsome gift of the tablet which has been placed in the hall."

Mr. FAULKNER: I have much pleasure in seconding that.

The motion was carried unanimously.

The PRESIDENT: I have much pleasure in informing you, Mr. Simpson, that the thanks of the Council have been accorded to you.

Mr. SIMPSON: Thank you, sir.

Melbourne College Committee.

The PRESIDENT: We now have to consider the Melbourne College Committee's report. You will remember the application, and it was decided to refer the matter to a committee.

The SECRETARY read the report, which stated that the whole of the correspondence which had passed between the officials of the Melbourne Veterinary College and the officials of the Royal College in reference to the application of the Melbourne College that their graduates should be entitled to registration as colonial practitioners under the Veterinary Surgeons Act of 1881, had been brought before the committee. The application appeared to mean

generally on behalf of all the graduates of the College, and not on behalf of any one individual. The Melbourne Veterinary College was recognised by the Colonial Government, and there was a provision in the Melbourne Act that members of the R.C.V.S. were entitled to registration in the colony. The Melbourne College curriculum provided for a four years' course, but the standard appeared to be inferior to that of the Royal College. The Melbourne College had offered to bring the standard up to that of the Royal College, provided their graduates were recognised. The committee reported, after full consideration of the matter, that they were unable to recommend that the graduates of the Melbourne Veterinary College should be recognised at present, it being clear that the standard generally was not up to that of the Royal College. With regard to the offer of the Melbourne College to raise its standard, the committee were of opinion that the Royal College should not enter into a bargain of that sort. Views might differ as whether the terms of any such bargain could be complied with, and it was better for the Royal College to reserve to itself any action in the matter. In conclusion, the committee suggested that, should the Council think fit to adopt the report, letters should be addressed to the principal of the Melbourne College, forwarding a copy of the report or embodying its contents.

On the motion of the President, seconded by Mr. Mulvey, the report was adopted, and it was further resolved that a letter, as drafted and read by the solicitor, be sent to the Melbourne and Colonial Schools, embodying the views of the committee, and that a copy of the report be sent therewith.

Court of Examiners.

The SECRETARY read the report of the Court of Examiners, which was adopted.

The SECRETARY read the reports of the examiners.

The PRESIDENT: I think, in view of what has occurred at Glasgow, that our thanks are due to Professor McCall for sending his students to Edinburgh.

Mr. WRAGG: I beg to move that.

Mr. MULVEY seconded the motion, which was agreed to.

Reports of Delegates.

The SECRETARY read a letter from Mr. Elphick, stating that he had attended the written portion of the examination, held at Edinburgh, where he found the arrangements made were perfectly good. The whole of the candidates presented themselves prompt to time, and he was pleased to say there was no complaint as to their conduct; everything passed off very satisfactorily. The Secretary also read a letter from Veterinary-Captain Butler, who reported that he had attended the examinations in London, in accordance with instructions. The students at the written examination were, in his opinion, seated much too closely together. At the oral examination, one of the examiners was late. That might be unavoidable, but he thought punctuality ought to be observed by the examiners as well as by the students. He had paid particular attention to the stable management and shoeing-table, where the examination erred, if anything, on the side of leniency. There had been some discussion with regard to that table, but he would observe, whatever its position in the scheme of professional training, it was absolutely necessary—more particularly that part which related to shoeing. He thought the term "stable management" was rather a misnomer in that connection. Generally the examination arrangements appeared to work smoothly and well.

The PRESIDENT: Has Mr. Mason made a report?

Mr. MASON: I have no report to make. Everything was satisfactory except the old cry that all the animals were healthy.

The PRESIDENT: You have heard the reports of the Board of Examiners and the delegates. Perhaps someone will move that they be referred to the Examination Committee to be acted upon.

Mr. FRASER: May we take it that the Examination Committee will see to that mistake that only healthy animals had been provided? It has been repeated over and over again.

The PRESIDENT: The way to have that matter attended to is to send the whole thing to the Examination Committee.

The SECRETARY: Enquiries were made of Mr. Rutherford, and he said he would do his best to get diseased animals.

Mr. FRASER: I will move that the reports be referred to the Examination Committee.

Mr. SIMPSON seconded the motion which was agreed to.

Mr. BARRETT: Might I suggest to you that there is the question of the students being placed too closely together? I complained of the same thing when I attended the examination. I think it is a matter that wants very careful consideration. I have no hesitation in saying that many of the students were reading the papers of those sitting in front of them. I should be glad if that matter was also referred to the Examination Committee to deal with.

Mr. SIMPSON: I now beg to move: "That a vote of thanks be accorded to the principals of the schools who afforded facilities for the conduct of the examination." I was not in Scotland and therefore I am not able to say what took place there, but I can say with regard to Camden Town that everything there was done for the convenience of the examiners and to the extreme satisfaction of the delegates.

Mr. MASON: As a delegate I beg to second that motion.

Agreed to.

Fellowship Degree.

The SECRETARY read the report of the chairman of the Fellowship Examination.

Notices of Motion.

The PRESIDENT: The next business is a notice by Mr. Barrett of a proposed new bye-law. I think it somewhat bears on what has been said here to-day.

The SECRETARY: The following is the proposed new bye-law which Mr. Barrett will suspend on the notice-board to-day:—"A student rejected at his fourth examination in respect of the theoretical portion of the examination shall not be permitted to present himself again for examination until he shall have attended at least one term at a recognised veterinary school; and a student rejected in the practical portion only of the fourth examination shall be permitted to present himself again at such practical portion at the next ensuing examination, and such student shall not be required to attend a veterinary school during the interval of such rejection and such examination."

The PRESIDENT: That is notice of motion. We have nothing to do with it now; it will be suspended on the board.

Professor MCFADYEAN: I do not know whether Mr. Barrett is aware that I have an identical resolution suspended.

Mr. BARRETT: I do not think the terms of your bye-law are quite satisfactory, and I have therefore placed mine on the board.

Mr. DOLLAR: Before the business is closed, I should like to ask whether you would be willing to take under the head of "other business," the election of the honorary and foreign associates.

The PRESIDENT: I will take them if possible, but I do not think they have been suspended quite three months.

The SOLICITOR: The qualification must be suspended for a period of not less than three months.

The PRESIDENT: Then we cannot take it to-day.

Mr. DOLLAR: I beg to give notice, then, that at the next meeting of Council, I shall propose those gentlemen for honorary and foreign membership, whose names are at present suspended on the notice board.

The PRESIDENT: Before we dissolve I have to call your attention to one matter. There is a defective water-pipe on the adjoining premises which is seriously damaging our property. Mr. Hill cannot get anything done by the owners, and it will be absolutely necessary for the solicitor to take some steps in order to get the matter put right. If not we shall soon be involved in expense on our own account. I therefore ask for your authority to instruct our solicitor to take action in connection with the matter.

Agreed to.

An the motion of Mr. WRAGG, a vote of thanks was accorded to the President for his conduct in the chair.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

(*Continued from page* 125.)

(13.) *Grey country-bred Gelding, 6 years.*

In hospital owing to contusions on 3 legs. A horse which is knocked about in the stable because he is dangerous to ride in school. Temperature 100° F.; pulse 40, and firm; respirations 10.

1st hour.—Ate feed and grass.

2nd hour.—Most excited with other horses near him, so I put him in a large open loose box to be alone; then he was quiet. Temperature 100 3-5ths; pulse 44.

3rd hour.—Sleepy and quiet, but excited if approached suddenly. Temperature 100 3-5ths; pulse 40, not so firm; respirations 10.

4th hour.—Very sleepy, eyelids almost closed, takes very little notice of anything or anyone; extremities warm; off feed; penis hanging pendulous, and pale in colour. Temperature 101°; pulse 40.

6th hour.—Has been asleep standing with eyelids closed for the last half-hour, and noticing nothing—one can do anything with him—when pushed he almost falls, his legs are so shaky; lower lip is hanging pendulous; penis has been hanging out almost constantly for the last two hours; has not eaten any food. Temperature 100 4-5ths; pulse 38, and soft; respirations can scarcely be counted, they are so soft and shallow.

7th hour.—Much the same.

8th hour.—Not quite so sleepy, but still extraordinarily drowsy: eats some grass, stops masticating it and leaves it between teeth or lips, whilst he closes his eyes and drops his lower lip; penis is still occasionally drawn. Temperature 100 4-5ths; pulse 38, and soft; respirations were very shallow.

10th hour.—When he eats some grass he completes mastication and swallows it. Is still very quiet, and staggers if moved. Temperature 100°; pulse 38, soft.

14th hour.—Has eaten a bran mash and grass greedily, and has been getting stronger on his legs; less sleepy, and lip less pendulous. Has passed nothing for 10 hours. Temperature 100°; pulse 40, soft; respirations 8.

20th hour.—Feeding quietly; is as usual; has passed two lots of dung in small dry pellets.

Hemp 3 drams. Temperature in the shade: At midday—95° F. At night—80° F.

(14.) *Chestnut country-bred Gelding, 10 years.*

A somewhat excitable horse. Grain, bran, and grass-fed. Temperature 101 2-5ths; pulse 44, firm; respirations 12. Within an hour he was standing with his penis drawn constantly about 3 or 4 inches; temperature 101 4-5ths; has passed dung of a very dark colour; no excitement.

2nd hour.—Sleepy-looking, with a dull expression of face, quiet, and taking little or no notice of things going on around.

3rd hour.—Has drunk water as usual, and eaten mid-day feed, though slowly; face is dull and sleepy; legs and ears warm; when made to move his forelegs are "shaky"; lip now pendulous. Temperature 101 4-5ths; pulse 60, full.

4th hour.—Stands very quiet with eyelids closed; eyes dull and sleepy; legs shaky when moved; penis still drawn and pale.

5½ hours.—Stands as before, but in addition is trembling all over the body. Has passed fæces of a very dark colour, and urine of strong odour and dark colour. Temperature 101 4-5ths; pulse 64; respirations 18.

7½ hours.—Standing quiet, very sleepy, with eyelids closed and lower lip pendulous; penis still drawn about 4 or 5 inches; still trembling, but not so much; would take no notice of water or food in front of him. Temperature 102 2-5ths, and when moved he staggered like a drunken person.

8th hour.—The trembling has passed off, penis is withdrawn; was taken out and trotted as if he didn't know where he was putting his feet, and he did not go in a straight line.

11½ hours.—Has occasionally been quite bright, woke up and picked at a mouthful of grass, and has eaten some grain and bran, then relapsed into a sleepy state but not such a deep sleep; has been bedded down but has not lain down. Temperature 103; pulse 66; respirations 18.

14th hour.—Eating grass, etc., firm on legs, body warm, but eye has still a dull expression, though he seems lively enough; has passed no dung for 9 hours.

16th hour.—He has bilious fever; temperature 105, etc., etc.

Experiment at an end; respirations, pulse, and temperature are no guide in this case owing to the setting in of bilious fever.

Weather dry and hot. Temp. in shade at mid-day about 98°F. At night about 88°F.

(15). *Chestnut Persian Gelding, 9 years.*

An easily excited horse, fed on grain, bran, and grass. Temperature 98; pulse 40; respirations 10.

At ¾ of an hour—Penis is already drawn 3 or 4 inches; lower lip is slightly pendulous, eyes have a dull expression; he is quietly standing with knees a little shaky.

At 1½ hours he is standing sound asleep, taking no notice whatever of anything around him, and staggers if pushed; has taken no notice of water and food; penis still drawn. Temperature 98°F.; pulse 38, soft; respirations, 10.

At 3rd and 4th hours just the same.

At 5th hour he passed some fæces in hard, dark-coloured pellets; has been picking up some grass and half chewing it, stops, leaving it between teeth or lips, protruding from his mouth; Temperature 98°F.; pulse 36, soft; respirations 8.

At 7th hour he ate a small warm feed—not quite so sleepy.

At 8½ hours he was decidedly more lively and bright, but the eyes had still a dull heavy appearance; penis is almost withdrawn; he stands on his legs firmer, and is picking at grass; he has not urinated for 7 hours.

At 11½ hours he appeared normal and bright.

Hemp 3 drams—Weather same as in case No. 1.

(16.) *Bay country-bred Mare, 8 years.*

A quiet horse, fed on grain, bran, and grass. Temperature 100°F.; pulse 40; respirations 10.

1st hour—Standing quietly, picking at some grass, with eyelids half closed.

3rd hour.—Is very sleepy and quiet; legs are firm; has passed some soft fæces of usual colour.

5th hour.—Standing sound asleep with eyelids closed; fore legs firm but rather apart from each other; muscles of elbow and stifle trembling; perspiring under rug. Temperature 100 2-5ths; pulse 40, soft; respirations 8.

8th hour.—Perspiring and trembling ceased, and sleepiness has passed off to a large extent; has passed some more dung, same consistence as before; eating feed. Temperature 100 2-5th: pulse 38, soft; respirations 8. Taken outside she trotted most playfully—far from sleepily.

11th hour.—Still dull and heavy about the eyes; eating grass quietly, and apparently normal. Temperature has fallen to 100.

Hemp 4 drams in bolus { Weather mild; temperature about 75° at mid-day; about 65° at night.

(17.) *Bay country-bred Gelding, 6 years.*

Quiet horse. Temperature 100 4-5ths degrees, pulse 40; respirations 12.

1st hour—Becoming sleepy and quiet.

2½ hours—Decidedly sleepy, standing, swaying about slightly; he picks at some grass, chews it a little, then stops and drops it, or holds some in his teeth when lower lip is pendulous, or between the lips; penis slightly drawn. Temperature 100 1-5th; pulse 36, soft; respirations 9.

3½ hours.—He is extremely drowsy, eyelids closed, the body swaying slightly backwards and forwards, and yet is easily awakened for a few minutes. Did not touch food, but drank water.

5th hour.—Much the same; ears drooping; lower lip very pendulous.

6½ hour—Much the same; offered water, he would not drink it. Temperature 99 3-5th; pulse 36, soft; respirations 9. He trotted steadily without swaying, although so sleepy when quiet.

9th hour—Has been gradually becoming less sleepy-looking; and penis is withdrawn. Lower lip is now less pendulous.

11th hour—Standing quiet simply, with sleepy-looking eyes. He has not eaten any food or grass. Temperature, pulse, and respiration as at the 6½ hour.

16th hour—Has gradually become more wakeful and bright, and is eating food and grass; though still dull; no fæces passed since first hour.

24th hour—Cannot notice anything abnormal, excepting that he has passed fæces only once since 16th hour.

Next day the dung was dry and in small pellets.

Weather mild; temperature in shade, at midday, about 75°, at night 60°.

(18.) *Bay country-bred Gelding, 6 years. Quiet horse.*

Temperature 100; pulse 34; respirations 12.

1st hour—Quieter than usual, and not picking at grass.

2nd hour—Quiet and sleepy, with occasional tossing of his head.

3rd hour—Quiet and sleepy, and still tossing his head. Has refused grain and bran, but eating a nibble of grass now and then, and leaving it between his lips and teeth. Penis has been occasionally drawn. Temperature 100; pulse 40. Taken out, he trotted with his head carried high.

4½ hour—Has been standing for the last hour sound asleep, with closed eyelids, pendent lower lip, and nose propped against the wall.

5th hour—Waked up a little, and occasionally picking at a mouthful of grass.

7th hour—Standing asleep again with head held low, lower lip pendulous fore legs slightly apart, but not shaky; legs and ears are cold; penis is drawn about a foot and pale in colour; abdomen tympanitic, but intestinal murmurs can be heard; and there is an occasional slight trembling of muscles of the elbow. Temperature 99; pulse 28, a long beat and very soft; respirations 10.

8th hour—Has been lying down for a quarter of an hour; got up, passed a little dry pellety dung, and a considerable quantity of flatus. Taken out he trotted with his legs wide apart and "all over the place"—as if drunk. Disinclined to eat; still very sleepy, and standing as before described.

10th hour—Much the same.

11th hour—Has just passed some fæces, pellety and covered with mucus; abdomen tympanitic still; he is moving about the box restlessly with staggering gait and sleepy face. Penis has occasionally been withdrawn. Temperature 99 1-5th; pulse 36, soft; respirations 10.

13th hour—Sleepiness has been gradually passing off; is quiet and not moving about; still tympanitic, but passing a lot of wind.

16th hour—Standing quietly eating grass; eyes a little dull and heavy-looking; warm and comfortable under rug.

20th hour—Seems normal. Has passed no more dung since 11th hour.

26th hour—Just passed a little dung--dry, hard, and pellety. Bright and cheerful.

Weather same as for case 18.

(19.) *Bay Australian Mare, 15 years; very quiet.*

Temperature 99 3-5ths; pulse 34; respirations 10.

1st hour--No alteration.

2nd hour—No alteration.

2½ hour—Mare standing quiet; passed normal fæces and urine: when taken out she trotted excitedly and with extravagant action.

3rd hour—Stands with dull expression and as if very drowsy, but is easily roused. She refused water, but eating grain and bran slowly.

4th hour—Decidedly sleepy.

5th hour—Now standing sound asleep with closed eyelids; legs firm and straight: no sweating; no tympany.

6½ hour—Temperature 98; pulse 28, soft; respirations 8. In same state as before.

7½ hours—Drank water, and immediately afterwards relapsed into somnolent state. On being taken out, she trotted with an unsteady gait.

9th hour—Still somnolent. Legs and ears rather cold; body warm under rug.

11th hour—A little more wakeful, takes notice of what is going on around, but eyes are half-closed.

13th hour—Still more wakeful. Has passed some dry, pellety dung--the first for 10½ hours.

20th hour—Is fresh and bright; trots as usual. Has passed some dung in night-time, firm, and in small pellets.

On the following day the dung remained firm, dry, and in small pellets. Weather same as case 18.

(20.) *Bay country-bred Gelding, 5 years, very quiet, and a crib-biter.*

Temp. 100F., pulse 32, respirations 8.

1st hour—Has just passed some dung—in a soft mass.

2nd hour—No change from the usual.

3rd hour—Same. Is feeding well, has passed some more dung, firmer, but not in lumps. Temp. 100F., pulse 38, respirations 10. No alteration in gait when trotted.

5th hour.—Standing quiet, not sleepy.

6½ hours.—Quiet as usual. Body, legs, and ears warm; picking at grass; drank a bucketful of water. Temp. 100 2-5ths, pulse 40, respirations 12.

8th hour.—No change.

11th, 13th } Same.

Note.—Either this horse did not swallow the ball of ext. cannab. indicæ, or it had practically no effect upon him.

Weather: At mid-day, temp. in the shade about 75° F. At night, cold and about 55°.

(21.) *Bay country-bred Gelding, 5 years, same horse as No. 20.*

Temp. 99° F., pulse 36, firm, respirations 16. Has just come in from three-quarter's of an hour's exercise, led. This second dose of hemp was given 13 days after the former one.

2nd hour.—Temp. 99, pulse 34, the respirations 8. I could not see any change.

4th hour.—Temp. 99 2-5ths, pulse 34, the respirations 8.

6½ hour.—Temp. 100 1-5th, pulse 36. Eyes have a dull expression, lower lip slightly pendulous. Upper and lower lips seem a little swollen. He trots as usual, is easily startled.

8th hour.—Has been very dull and quiet, with a sleepy expression of face, but became a little nervous and excited when touched on the face. Legs firm, and of ordinary temperature. Temp. 100 1-5th; pulse 34, soft; respirations 8.

9th 10th, 11th hour.—Temp. 100 2-5ths; pulse 34, soft; respirations 8. He ate feed well and heartily. No further change.

12th hour.—Legs firm, and the lower lip is not now pendulous. Still a little drowsy and very quiet.

14th hour.—Less drowsy; in fact, excepting for a sleepy expression of eyes when left very quiet, there is nothing abnormal, as the slightest sound rouses him up. Has just passed the usual quantity of dung, in small firm pellets—the first since the hemp was given, 14 hours ago.

23rd hour.—Normal in every way. Temp. 100 2-5th, pulse 36, respirations, 8.

Note.—Comparing this with No. 20, I presume that horse did not receive all the ball supposed to have been given, so we may exclude No. 20 from our deductions.

Hemp, 6 drams in balls. { Weather: Warm at mid-day. Coldish at night.

(22.) *Grey country-bred Gelding, 6 years.*

For temperament *vide* No. 13. A horse which was knocked about in the stable because he was unsafe in the school. Temperature 100 4-5th, pulse 38, respirations 12.

1st hour.—Has passed some dung of a natural consistence, etc.

2nd hour.—There was no change to note.

2¾ hour.—Stands quiet, with penis drawn about 3in.; body, legs, etc., warm; drank water freely and easily; pulse 40, respirations 10.

3¼ hour.—Is most easily startled at any sound, not at all sleepy-looking. Ate his feed slowly, frequently stopping as if he did not care much for it—half-an-hour occupied in finishing it; ate his grass as usual after the feed.

4½ hour.—Standing very quiet and sleepily, with knees bent and shaking (is remarkably shaky on his fore-legs).

5½ hour.—Much the same, but eyelids are not closed; lower lip is pendulous; when roused up this pendulousness disappears; has been rubbing his nose against, and at times licking the mud wall; penis has been frequently drawn and retracted, there is no sweating; legs are of normal temperature; when taken out he trots with an exaggerated action, tossing his head about. Temperature 99 3-5ths; pulse 34, soft; respirations 11.

6th hour.—Abdomen has become tympanitic; there is no pain with the tympany.

7½ hour.—Standing extremely quiet; eyes dull and lids almost closed when quiet. If moved he does so with an unsteady gait. Is easily roused, and then is inclined to eat his bedding; penis is drawn about four or five inches. Temp. 99 1-5th; pulse 28, soft; respiration 10. Urine is passed freely and of usual colour.

9th hour.—Eyes dull, heavy, and sleepy-looking; lower lip pendulous; mouth is hot and very dry; has been eating feed very slowly, and is picking at bedding; has been frequently drawing and retracting penis.

13th hour.—Stands dull, quiet, and sleepy-looking, but is easily roused; lower lip still pendulous; legs, etc., rather cold, firm and steady, not shaking at the knee. Temp. 100, pulse 48, respirations 12.

15th.—Beginning to brighten up; lip not pendulous, excepting when he falls asleep for a few minutes.

21st.—By this time all appearances of sleepiness had passed off, and he was bright and cheerful. What little fæces had been passed is small, dry, and pellety.

Weather: Mild at daytime. Cold at night.

(23.) *Chesnut Persian Gelding, 9 years.*

A rather easily excited horse, and a kicker. Temp. 100 1-5th, pulse 32, firm. Put into a busy part of the stable.

1st, 2nd, and 3rd hour.—No change.

4th hour.—Has an excitable manner, and is easily upset; penis is drawn about four inches, and is very pale. Temp. 99 2-5ths, pulse 32, firm; respiration 8.

5th hour.—Sleepy.

6¼ hour.—Eyelids half closed; dull, heavy and sleepy appearance about the eyes; lower lip is pendulous, and tongue is caught between the teeth; rouses himself up now and then to pick at some grass. Temperature 99; pulse 26, very soft. Taken out, he trotted very unsteadily, and passed about six small dry pellets of dung. Legs and ears fairly warm.

7th hour.—Stands very quiet, with eyelids nearly closed; forelegs rather shaky; pulse 24, very soft; respirations 9.

9¼ hours.—Same condition, hanging ears, eyelids nearly closed, lip pendulous, etc.; is easily roused, but he just as quickly drops off to sleep again. For the last three hours his penis has been constantly hanging out about 12 inches, and very pale in colour. Temperature 100 F., pulse 26, very soft; respirations 8 or 9. Has just passed some dung in small firm pellets.

10½ hour.—Has been picking at food slowly and intermittently for the last hour. When not feeding he is same as above.

13th hour.—Still in same sleepy state.

19th hour.—Beginning to brighten up; lip less pendulous; legs firmer.

23rd hour.—Has not been down during the night; has still a heavy, drowsy appearance about the eye. Has just passed the first lot of dung since about the ninth hour.

28th hour.—Pulse has risen gradually to 34, and become firmer, and excepting for a dull, heavy expression of eyes, he is normal.

Weather: Mild at mid-day. Cold at night.

(24.) *Chestnut country-bred mare, 7 years.*

A very quiet horse. Temperature 101 1-5th; pulse 36, firm; respirations 7. Was put in a busy part of the stable.

2nd hour.—No change.

4th hour.—Picking at grass, ears thrown back; excited expression of face, objects to anyone approaching, and kicked viciously when we attempted to take the temperature, quite contrary to the ease with which it was taken before; pulse 30, firm; mucous membranes paler.

6th hour.—Standing quiet, with bright open eyes; ears held persistently backwards; pulse 28, and soft; temperature 101 1-5th, which she objected to have taken. Taken out, she trotted as usual.

7th hour.—Rather sleepy-looking, eyes heavy, lips partially closed.

8th hour.—More sleepy-looking, but most easily roused.

9th.—Decidedly sleepy, but easily roused; lower lip is not pendulous; legs firm and steady; legs and ears warm. Is not in that deep drowsy state evinced by 23.

10th and 11th hour.—No change.

12th hour.—Temperature 101; pulse 28, and so soft that I could scarcely feel it; respirations 10. Has passed no dung since receiving the hemp.

16th hour.—Brightening up, but eyes are still dull and heavy.

24th hour.—Ate food, but very slowly; is bright and cheerful, but in spite of that, the eyes have a dullish appearance when she is quiet. Temperature 101; pulse 30, soft; respirations 10.

28th hour.—Much the same appearance, is feeding well; legs, ears, etc., are warm; no dung has been passed for 16 hours, and now what little is passed is in small pellets.

32nd hour.—Eyes and everything normal. Subsequently, dung remained hard and in small pellets for a whole day afterwards.

Hemp 8 drams in balls with linseed meal. } Weather: Cold at night. Warm during the day.

(25.) *Iron Grey, country-bred Gelding, 5 years.*

A nervous, kicking brute. Temperature not taken, pulse 32; respirations 12. In the lines with other horses.

1st and 2nd hours.—There is an incessant nervous tossing of the head.

4th hour.—Has been standing very quiet for an hour without tossing his head, but when touched, he became excitedly nervous. Penis is drawn about 2 inches. Temperature 99° F.; pulse 30, firm; respirations 8. Has eaten his food as usual.

6th hour.—Eating grass occasionally, and leaving some now and then in between lips for some time; eyes dull and heavy; shaky on fore-legs, and body swaying backwards and forwards. When approached suddenly, his demeanour changes and he "goes for one." Temperature 98 2-5ths F.;

pulse 32; respirations 7. He trots very unsteadily; penis has not been out for the last two hours.

7th and 8th hours.—Has been very drowsy and sleepy, and takes no notice of anyone—a great change within an hour.

9th hour.—In the same condition, with quivering of muscles of elbow and flank; penis drawn about 9 inches. Temperature 99° F.; pulse 28, and very soft: respirations 8.

10 and 11th hour.—Very drowsy and sleepy, and constantly swaying backwards and forwards; if moved, he tries to steady himself, but the legs are very shaky; eyes almost closed; ate his feed but very slowly, and as if he did not care for it.

15th hour.—Sleepier still, and legs used as "props" to steady him.

16th hour.—Same condition, not picking at grass in front of him. No change in temperature, pulse or respirations; no dung has been passed for 16 hours.

23rd.—Standing quiet, with a dull though open eye, eating as usual; has not lain down during the night. Temperature, pulse, and respirations unchanged. Has passed a little dry dung; penis withdrawn.

25th hour.—Brightened up, legs steady and held naturally.

30th hour.—Normal, excepting that the eyes have a sleepy, heavy appearance.

34th hour.—Normal. Temperature 99 2-5ths; pulse 32, and fairly firm; dung usual.

Weather: Cold at night. Warm during the day.

(26.) *Grey country-bred Gelding, 6 years.*

Temperature 100 4-5th F.; pulse 48, firm; respirations 10.

1st and 2nd hours.—Quiet and as usual; picketed out away from all other horses in the lines.

2¾ hours.—Temperature 102 1-5th F.; feeding, and as usual.

3¼ hours.—Becoming sleepy-looking, with a dull expression of eye when perfectly quiet; penis drawn about 3 or 4 inches.

5th hour.—Temperature 100° F.; pulse 32, very soft; respirations 8. Standing with head down, eyelids almost closed, lower lip pendulous, lips slightly swollen; has been picking at grass occasionally, leaving some sticking between the lips and teeth when not eating; pupil is enlarged; is unsteady on his legs and swaying backwards and forwards; does not take the slightest notice of flies on face or body, but is frightened and shivers if touched suddenly; penis is drawn about a foot and is pale in colour; when trotted he did so sideways and very unsteadily; after the trot he stood very unsteadily on his legs, and quivering all over for a few minutes.

6th hour.—No change.

7th hour.—Temperature 100 2-5ths; pulse 28, very soft; respirations 7.

9th, 10th and 11th hour.—Has scarcely moved; some grass has been grasped by lips for the last 2 hours; penis has been out almost constantly for some hours; is breathing with guttural sound; pulse is almost imperceptible, 28 per minute. Temperature 100 2-5th F.

13th hour.—Standing the same, with eyelids closed—when they are open he cannot see distinctly, or else he is far too sleepy to take the slightest notice of anything; if moved a little he is most unsteady on his legs; respirations 6 and accompanied still by a guttural sound; pulse 28, extremely soft. Temperature 100 2-5ths.

18th hour.—If anything, not quite so sleepy.

22nd hour.—Has not laid down during the night; is very quiet and drowsy, but inclined to pick at grass though not at his food.

24th hour.—A little brighter, though very quiet still; legs are very unsteady if moved; penis now withdrawn. Temperature 100 3-5ths; pulse 36 per minute, soft: respirations 8, no guttural sound. He trotted a little unsteadily on his fore legs.

26th hour.—Eating very slowly; brighter, but still a little unsteady on his legs; pupil is widely dilated, no change in temperature or pulse.

32nd hour.—Has gradually become brighter—outwardly he appears normal, excepting that his eyes have a dull expression. No dung has been passed since the first hour until now, a very little, dry, and in small pellets.

35th nour.—Seems normal in every way, but usually quiet.

Hemp 1½ ozs. in boli with linseed meal. { Weather: Temperature at midday 80° F. at night about 55° to 60° F.

(27.) Horse is standing out in the open and alone. Temperature 99 3-5th; pulse 40, firm; respirations 12.

½ hour.—No change.

1½ hour.—Temperature 100. No change in pulse, respirations, etc.

2nd hour.—Is quiet and dull-looking about the eyes, lower lip slightly dropped. When some horses at riding school came near him, he pawed and jumped about most excitedly with "cocked ears" and staring eyes, as soon as they passed he relapsed into quietude, the lower lip dropped, etc.

3rd hour.—Temperature 99 4-5ths; pulse 38, and very, very soft; respirations 12; is standing dull, quiet, and listlessly, with lower lip very pendulous, and fore legs shaky at the knees; is very easily roused if touched.

4th hour.—When grass was given him he woke up thoroughly and ate it, but his eyes had a dull expression; pulse 34, and very, very soft. Temperature 100 1-5th.

4½ hour.—The grass eaten, he became as before. When trotting he was quite firm on his legs and passed some dung. Legs cold, ears warm, pupil slightly dilated.

5th hour.—Is easily startled, and if suddenly approached is very frightened: penis is now drawn 4 or 5 inches for the first time, and is very pale in colour. When quiet he is decidedly sleepy and shaky at the knees. Has eaten feed very slowly.

5½ hour.—Temperature 100 F., pulse 30, and extremely soft; the respirations are so shallow that I cannot count them easily. Standing with head down and lower lip very pendulous; is extremely sleepy (eyes quite closed), and is very unsteady on his legs if moved; penis still drawn and pale; pupil slightly dilated; legs cold and ears warm.

7th hour.—Temperature 100 F.; is in a still deeper soporific state, the lower lip is as pendulous as it is possible for it to be; standing sound asleep; is slobbering at the mouth, and his tongue is hanging out for a short distance from between the opened jaws.

10½ hour.—In the same state; he must have been picking up some grass as some is now sticking between his lips, the pulling of which does not make him chew it.

13th.—Although when quiet he is in the same state, still he occasionally wakes up, closes his jaws, pulls his tongue in and eats grass for a minute, stops, and leaves it between lips and protruding tongue. Legs are shaky but now warm; ears are warm.

16th hour.—In same condition and standing without moving, in fact he hasn't moved for two hours.

20th hour.—Tongue is retracted, and slobbering has stopped.

23rd. hour.—Has a very dull heavy expression of the eye; the lower lip is still pendulous; is eating some grass slowly as if with very little relish; legs and ears cold; trotted steadily; has passed a very little dry pellety dung—

the first since the 4½ hour. Temperature 99 1-5th, pulse 32 and extremely soft, respirations 10.

26th hour.—Temperature 99 3-5th F.; pulse 38 and very soft, respirations 10. Still stands quiet, with a dull expression of face and pendulous lower lip; the legs and ears are cold and his "coat staring"—he seems to feel cold although the sun is shining on him; there is no wind, and the temperature of the air in the shade is over 55 F., now and at mid-day was 80 F.

33rd hour.— Although he has been rugged up and bandaged for an hour, hts coat still "stares." Brightening up generally.

34th hour.—Skin of body warmer, legs and ears still cold; he is decidedly brighter-looking in the face; lip is normal; he is eating grass.

42nd hour.—He seems normal. Fæces for the day afterwards passed in small quantities at a time, about half the usual amount per diem, and in small, round dry pellets.

Summary of preceding.

Hemp 1 *dram.*—Out of the eight horses in this series, on one (No. 4), it had no effect beyond lowering the pulse four beats per minute.

No. 3 was only a little quieter than usual, and his penis was frequently drawn; this horse's pulse was increased four beats.

No. 6. was easily startled after the second hour, and was hilarious from the 5th to the 7th hour; the pulse was raised six beats.

No. 8 was unusually quiet (not sleepy from about the 2nd to 3½ hours, but was excited and nervous at anyone's approach, and trotted with an excited action. In this horse the pulse and temperature were so slightly affected that I took no note of them.

On two horses a more or less soporific action was caused:—

No 1 became sleepy, but was easily roused and excited from the 2½ to the 4½ hours; pulse was raised a few beats.

No. 7 was dull at the 2nd hour, and sleepy at the 4th and 5th hours, but without any exhilirant action except when trotted.

On two other horses a marked soporific action was produced, preceded in one horse (No. 5), by an exhilarant stage of excitement, which lasted from the 1½ to the 2½ hour, after which she lapsed into a sleepy state, and then from the 4½ until the 8th hour was under the soporific influence of the drug. At the time the pulse was lowered six beats and became soft and full.

In the other horse (No. 2), there was no preliminary stage of excitement. At the 2nd hour she was sleepy-looking, and from the 2½ to the 5½ hour, was in a soporific state, though easily roused; her pulse was lowered 10 beats.

Sweating, etc.—In Nos. 2, 5 and 6, the hemp caused local sweating; whilst in No. 2 the veins of the face were prominently gorged.

The penis.—Of the 5 geldings, three had the penis drawn.

Trotting.—Of the 8 horses, three (Nos. 3, 4 and 6), trotted as usual, four (5, 7, 8 and 1), trotted excitedly, and one (No. 2). as if drunk.

2-dram Series.

When 2 drams were given to the four horses (9, 10, 11 and 12), in one dose to each, all were brought under its soporific influence.

No. 9 from the 2½ to the 12th hour—total 9½ hours.

No. 10 was sleepy, though easily startled during the first hour; during the 2nd and 3rd, the soporific effects were being gradually produced, and were strongly marked from the 4th to the 15th hour—total 11 hours.

No. 11 began to be sleepy at the 2nd hour and was decidedly so up to the 12th—total 10 hours.

No. 12.—At the 2nd hour was quieter than usual, but from the 4th to the 10th was under the soporific action of the drug—total 6 hours.

In three of these horses there was no stage of marked excitement, only No. 10 showed the exhilarating action during the first hour.

The pulse.—This in Nos. 9, 10, and 11 was reduced from 34 or 36 to 26 and 28, and became soft, but in No. 12 it fell only two beats per minute.

Temperature.—That of No. 10 in which an exhilarat action was shown rose from 99 1-5th to 99 2-5ths, but during the soporific stage fell to 97. Of the other three in which no exhilarating action was manifested—in No. 12 during the 2nd hour it rose from 100 1-5th to 100 2-5ths but afterwards fell to 100; in No. 9 it receded gradually from 100 to 98, and in No. 11 from 99 to 98.

Sweating.—This occurred only in No. 9 as a cold patch on the neck.

Penis.—Of the three geldings that of Nos. 10 and 11 was frequently protruded and retracted.

Lower lip.—This became pendulous in all four—in Nos. 9 and 10, at the the first hour, in No. 11 at the 2nd hour, in No. 12 at the 6th hour.

Trotting.—Nos. 11 and 12 trotted with an excited action, No. 10 very unsteadily, No. 9 as usual.

The appetite.—Nos. 9 and 10 were "off feed" for a time, No. 11 ate slowly, and No. 12 as usual.

Tympany.—This of the abdomen occurred in No. 10.

3-*Dram Series.*

The administration of 3 drams produced soporific effects in the four horses to which it was given specially, and so early as in the second hour in Nos. 14, 15 and 16, without the preliminary stage of excitement shown by No. 13. It is to be noted that the duration of the soporific action was from 7 to 11 hours, and the longer a horse was in that state the deeper or marked the soporific action.

Pulse.—In No. 13 fell from 44 to 38, in No. 15 from 40 to 36, and in No. 16 from 40 to 38; and in all three it became softer than before.

Temperature.—The effect of the drug upon this was not uniform. In No. 13 it rose by the fourth hour from 100 to 101, after which it gradually fell again, and reached 100 at the 10th hour. In No. 15 it remained stable. In No. 16 it rose by the fifth hour 2-5ths, and fell again to its original height, 100. That of No. 14 cannot be taken any notice of, as bilious fever was setting in; but it is interesting to note the strong soporific effect of the drug in spite of the high temperature and fever.

Respirations.—That of each of the three horses, Nos. 13, 15. 16, fell from 10 to 8; and in No. 13 became so shallow that it was difficult to count.

Sweating.—This occurred in No. 16 only.

The penis.—That of each of the three geldings was drawn and pale in colour.

The lower lip.—This was pendulous in three, but was not noted in my record of the fourth.

The appetite.—That of Nos. 13, 14, 15, was interfered with, but not that of No. 16.

Constipation.—This occurred in No. 13 for 10 hours, in No. 14 for 9 hours, and No. 15 was inclined to be costive. The fæces of No. 16 were as usual.

4-*Dram Series.*

(4 drams.) There are five horses in this series, but we need take notice only of four horses, as No. 20 must be excluded. He apparently did not receive all the hemp, as the same dose given at a later period acted upon him (No. 21). The soporific action was manifested in all four (Nos. 17, 18, 19, 21).

No. 17 within an hour was gradually yielding to sleep, during which time there was no exhilarating effect, and from the 2½ to the 11th hour he was entirely under the soporific influence.

No. 18 for the first 3½ hours was sleepy-looking (but from the second to the third hour there was an occasional tossing of the head), thence up to the 11th hour he was in a deep soporific state.

In *No.* 19 for the first two hours there was no change whatever, but at the 2½ and 3rd hours she was quiet though easily roused, and was decidedly under the soporific influence from the third to the 11th hour.

In *No.* 21 up to the 6th hour no change was noticed, excepting a slight rise in temperature, but from that the 6½ hour until the 14th he was, to a certain extent, under the soporific action of the drug, but there was no profound sleep or stupor.

In these horses there is a great difference in the time at which the soporific effects of 4 drams of the drug were produced. On Nos. 17 and 18 the hemp exerted this power within an hour, on No. 19 not for two hours, whilst on No. 21 in six hours.

The pulse.—That of No. 17 at the 2½ hours was reduced from 40 to 36, and became soft, and so it remained up to and beyond the 11th hour; that of No. 18 at the third hour (when there was a nervous tossing of the head) was raised from 34 to 40, but it subsequently fell to 28, and became very soft in charaacter; and at the 11th hour, when restless owing to the tympanitic, colicy pains, it rose again to 36, but was soft still; that of No. 19 at the 6½ hour fell from 34 to 28, and was soft; whilst that of No. 21 was practically unaltered.

The temperature.—That of No. 17 fell from 100 4-5ths to 99 3-5ths at the 6½ hour; that of No. 18 fell from 100 to 99 at the 7th hour; that of No. 19 at the 6½ hour fell from 99 3-5ths to 98; whilst that of No. 21 rose gradually from 99 to 100 2-5ths.

The respirations of all were lessened (in number as follows: No. 17, from 12 to 9; No. 18, from 12 to 10; No. 19, from 10 to 8; No. 21, from 16 (after exercise) to 8.

The penis of each of two out of the three geldings was drawn.

The lower lip was pendulous as in earlier cases.

The appetite.—Nos. 17 and 18 were for a time "off feed"; Nos. 19 and 21 were unaffected.

The fæces.—Regular defecation of all (except No. 20) was interfered with, and the dung of all on the day following administration of the drug was dry and pellety.

Sweating did not occur in any.

Tympany of the abdomen appeared only in No. 18.

6-*dram Series.*

In all three horses a strong soporific action was developed.

In *No.* 22 for two hours there was no change, but before the third hour he was becoming sleepy, and remained completely under the soporific action of the drug until the 15th hour—*i.e.*, about 12 hours.

In *No.* 23 for the first three hours there was no change, at the fourth hour he was exhilarated, whilst from the 5th to the 19th hour he was in a deep sleep—*i.e.*, about 14 hours.

In *No.* 24 for about two hours there was no change, from the 4th to the 6th he was exhilarated, and from the 7th to the 16th in the soporific state—total, 9 hours.

Pulse.—That of No. 22 rose at the 2¾ hours from 38 to 40, then it gradually fell to 28, and was very soft at the 7½ hours, after which it rose at the 13th

hour to 48; that of No. 23 fell to 24 at the 7th hour; whilst that of No. 24 fell from 36 to 28.

The respirations.—Those of No. 22 were reduced from 12 to 10; those of No. 23 remained 8 or nine throughout; those of No. 24 rose at the 12th hour from 7 to 10.

The temperature of No. 22 fell from 100 4-5ths to 99 1-5th at about the 7th hour, and at the 13th rose to 100; that of No. 23 from 100 1-5th fell at about the 6th hour to 99, and at the 9th hour again rose to 100. I could not take the temperature of No. 24 until the 6th hour, when it was found to be the same as before the hemp was given, viz., 100 1-5th, and at the 12th and 24th hours it was 101.

None of these horses *sweated.*

The penis of each of the three geldings was drawn.

The lower lip was pendulous in Nos. 22 and 23, but not in No. 24.

Trotting.—No. 22 did so with exaggerated action, No. 23 very unsteadily, and No. 24 as usual.

The appetite.—All ate their feed, though slowly.

Tympany.—No. 22 had abdominal tympany, but not Nos. 23 and 24.

The fæces of all three became dry and pellety, combined with costiveness.

1 *oz. Series.*

The two horses in this experiment lapsed into a deeply soporific state, which lasted in one case for 17 hours, and in the other for 21 hours; in one horse, No. 25, preceded by a stage of excitement, but not in the other.

The pulse of each horse was lowered in number of beats and in strength, becoming almost imperceptible in No. 26.

The Temperature of No. 25 remained fairly steady; but that of No. 26 rose at about the third hour from 100 4-5ths to 102 1-5th, after which it rapidly fell to 100, subsequently remaining about 100 2-5ths or 100 3-5ths. I cannot quite understand why there was a rise of temperature at the third hour, when outwardly there was nothing to make one expect it, and there was no excitant stage.

The respirations.—Those of No. 25 fell from 12 to 7, and of No. 26 from 10 to 6, in the latter accompanied by a guttural sound.

The penis of each was drawn early, even in the excitant stage.

The lower lip was pendulous in No. 15, but not in No. 25.

The appetite was interfered with in both cases.

Costiveness is to be noted in both.

Pupil of eyes of No. 26 was widely dilated at about 26th hour.

1½ *ozs.*

Only one horse received this amount.

At the second hour he was dull and quiet, but easily excited, whilst from the 3rd to the 34th hour he was under its soporific influence—*i.e.*, 31 hours.

The pulse, from 40 and firm declined to 30, and became extremely soft; and the respirations became slower and shallow; whilst the temperature remained near 100 during the whole time. The lower lip was pendulous as usual, but in this case there was slobbering at the mouth, with tongue hanging out and the jaws a little opened, from the 7th to the 20th hours. His penis was drawn and pale-coloured; and he stood shakily at the knees, though he trotted steadily. He did not eat heartily, and seemed to feel the cold about the 32nd hour, although the weather was warm. Pupil of the eye was dilated.

The drug in all the above-mentioned cases was given by the mouth, no matter the dose, and in one, two, and three balls, made up alone or with the addition of linseed meal, or, in a few instances, gentian powder. One ready method of use is in the dessicated state—obtained by drying the required dose in a spoon over a flame. The hemp in all cases mentioned in this note was in its commonly-met-with, official state—*i.e.*, soft and pultaceous and of a greenish hue.

It cannot fail to be noticed that there is a certain amount of lack of uniformity in the action of the drug in healthy horses and in diseased; and this is most marked in the smaller doses. In the 1-dram series we cannot say that the temperament of the horses was the cause of this, as seven of them were quiet, and yet on two of these the hemp had practically no soporific action; a third was only made quiet; two were made sleepy; and on two others it had a soporific action; the remaining horse (No. 6) was a timid one, and in him the timidity was increased. In cases of colic, to which 1 dram had been given, the same uncertainty of action was manifested. From the larger doses some horses became hilarious, others not; whilst others, again, entered the soporific stage without any preceding hilarity. I have often wondered if this were due to the rough method of preparation of the extract by which one may obtain a larger quantity of the active principle of the drug in one small portion of material and less in another, or whether it is due to more than one oil, resin, or alkaloid, etc., being present, each having its own peculiar action of course, but *irregularly distributed in the extract;* if so, let us hope that these may soon be separated, and a chance given us of knowing the specific action of each, and apportioning each its particular sphere of utility in medicine.

Illustrative of the occasionally most uncertain action of the extract, I may relate a case I had to do with:—In the summer of 1895 a well-bred pony, which kicked and was fidgetty when mounted, but was quiet in the stable, after having been castrated became furiously fidgety or nervous, and bled a good deal in consequence, and "went for" anyone approaching. I gave him 4 drams of extract of cannabis indic. in bolus with gentian pulv., but he was fidgety, biting, and kicking as badly as before for *nine hours after the hemp was given.* After this time he fell into a deeply soporific condition, in which he remained for nearly twelve hours, and during which time he refused water and food of any sort. The animal was in such a deep stupor that the owner thought he was dying, and again sent for me. The pony was standing perfectly quiet and as if sound asleep, with open mouth, head held low, ears dropped, and eyes closed, breathing very slowly, pulse down to 26 per minute, etc., and he didn't care, and scarcely knew, what was being done to him. Sniffs at the liquor ammonia bottle soon roused him for a few minutes at a time, but nothing more was necessary.

I will now give a few notes as to the action of this medicine on horses when suffering from diseases in which pain or spasm is a marked symptom.

As I have already said, 1 dram is uncertain in its action. A dose of 1½ drams is an anodyne and acts effectually in the majority of cases for which it may be required, especially bowel complaints of a simple nature. It was found to be a soporific in 2 drams to 4 drams doses, even in the majority of the most violent cases—there was a lessening or complete cessation of pain accompanied by sleep of varying degree in two to four hours after its administration. For this purpose I have given it specially alone or soon after other medicines, such as stimulants, purgatives, etc., in over 150 cases of simple spasmodic and flatulent colic, constipation, torsion of the colon, rupture of the stomach, and colon, and enteritis, and cannot speak highly enough of it. Many of the simpler cases were almost instantly relieved by one dose of 2 drams, and the horse was not in the least affected afterwards by drowsiness, nor was his appetite impaired. Evidently it relaxes

spasm of involuntary muscles specially. In the more serious cases, when relief to pain has not been given by one dose, it has been found advisable to repeat the 2 dram doses as required, with an interval of about four hours between them, in preference to giving a large dose of 4 drams, 6 drams, or 8 drams at the outset. I have given large doses, but experience has taught me that it is better to give this drug in small doses, repeated if necessary, even up to an ounce, for when given in this manner the stupor (I cannot call it sleep) is less marked and there is a diminution of the after ill effects of large (6 drams or 1 oz.) doses, such as constipation or tardy action of the purgative medicine which may have been given previously.

Six or eight dram doses cause, if I may use the expression, a drunken stupor, which lasts nine or twelve hours in the majority of cases, a stupor which cannot be at all conducive to the favourable action of other medicines, nursing, or mechanical remedies.

The constipating effects of large doses of this drug are in some instances rather objectionable. In one case of violent spasmodic colic to which aloes, oil, and stimulants had been given, as well as 1 oz. of ext. cannab. indic. (in 2 doses of 4 drams each at an interval of two hours); although the colicy symptoms were relieved and the bowels were removed fairly regularly during the first ten to twelve hours in which he was ailing, yet subsequently, and up to the sixtieth hour after the onset of the colic, no fæces were passed. At the fortieth and forty-eighth hours this horse received ½ oz. of tcr. nucis vom. to rouse him out of his lethargic state, and to try and move the bowels.

In some cases of ordinary spasmodic colic, to which stimulants and 4 drams of this drug, but no aloes, had been given, the bowels have been costive for eight or ten hours subsequently.

No doubt large doses of hemp should prove useful in those cases in which it is desirable to keep the bowels inactive for some time.

This medicine was found invaluable in some cases of most violent diarrhœa accompanied by colicy pains—resulting from whole, unparched and unbruised barley having been given to some horses which were unaccustomed to it. It allayed pain most markedly and lessened the force and frequency with which the fæces were expelled. The dose given was 3 drams to 4 drams each horse.

The effect upon the pulse during the progress of bowel disease of doses of 4 drams or over is a softening of the beat, lessening of force, and a diminution in the number of beats.

In two severe cases of tetanus I tried this drug, and gave large quantities by putting it on the teeth, but without the slightest effect; certainly the muscles of the jaw were at the time in a tetanic state, so I doubt if much could have been swallowed. If this medicine is really of any use in tetanus I imagine the best means of giving it would be by injecting a solution intratracheally or hypodermically.

In a case of diffuse abscess at the base of the brain in a horse, it had not the slightest effect in mitigating the violently spasmodic movements of the animal, although I gave large doses repeatedly.

I am inclined to think that the soporific action of the hemp is hastened if sulphuric ether be given along with or immediately after the hemp.

In conclusion, I beg to subscribe my humble opinion that, to my mind, so far as my experience in India goes, this medicine is to be preferred to morphia, opium powder or tincture tor bowel diseases, as it allays pain more effectually, and the smaller doses do not materially interfere, if at all, with the purgative medicines commonly given, although most certainly large doses do.

TO THE MEMBERS OF THE PROFESSION.

GENTLEMEN,—I beg to offer myself to you as a candidate for election to the Council of the Royal College of Veterinary Surgeons, nominated by Veterinary-Colonel J. D. Lambert, C.B., Director-General of the Army Veterinary Department.

1. I am in favour of progress, for if the profession does not advance it will go backwards; it cannot remain stationary.

2. I am of opinion that the public now expects a high degree of education from us, but that this education must not only be theoretical but thoroughly practical, and any steps taken to bring this end about will receive my cordial support.

3. I consider that we do not receive the official recognition we are entitled to as educated professional men, in the matter of exemption from service on juries, proper fees being paid for expert evidence, meat inspectorships, and inspectorships under the Board of Agriculture being in the hands of laymen, together with the constitution of that Board as far as we, as the profession, are concerned.

4. I am convinced that these matters will not be set right until we have one of our profession returned as a Member of Parliament to guard our interests, and to this I consider we ought now to devote our attention.

5. Owing to the growth of the empire the profession requires protection in our colonies and dependencies, and of these I have, perhaps, a somewhat larger knowledge than most, having visited many of them.

6. Being permanently stationed in London for some time, if I have the honour of being elected, I hope to be a working member of the Council, without being a London practitioner, and, in short, I will use my best endeavours in forwarding the interests of the veterinary profession.

I am, Gentlemen, yours obediently

JOSHUA ARTHUR NUNN, F.R.C.V.S., C.I.E., D.S.O.

Veterinary-Captain, Army Veterinary Department.

London, *February 24th*, 1897.

RINDERPEST.

Investigations at Kimberley.

THE following copies of Professor Koch's first two reports to the Secretary of Agriculture upon his researches in Rinderpest are herewith published:—

Cape Colony, Kimberley,
9th December, 1896.

The Secretary for Agriculture, Cape Town.

Sir,—I have the honour to report herewith to you upon what I have done up to the present in connection with the investigation of rinderpest as follows:

Having arrived at Kimberley on the morning of the 5th inst., I first of all inspected, in company with Doctors Turner and Edington (the latter having joined me already at De Aar), Mr. Hutcheon, and my assistants, the premises of the Victorian Compound, which Mr. Hutcheon proposed as being suitable for scientific experimental station. The place seems indeed admirably adapted for my investigations.

It is situated about two miles from Kimberley, and being separated from all outside intercourse by means of fences, it only requires few attentions in

the outbuildings for the sake of housing suitably the animals to be experimented on.

The house standing on the premises contains some spacious and well-lighted rooms, which will be arranged for laboratory work.

After this inspection of the Victorian Compound, I had a short conversation with the above-named gentlemen, and also with Mr. Henning, who had arrived in Kimberley at two o'clock in the afternoon.

Owing to these conversations, and especially on the suggestion of Dr. Edington, I proceeded on the evening of the same day, accompanied by the same gentlemen, except Mr. Hutcheon, who remained in Kimberley in order to arrange the fitting up of the experimental station and the purchase of animals, to the research station of Dr. Edington, situated at Taungs, at the railway station.

Having arrived there on the morning of the 6th inst., I visited the laboratory and saw the arrangements made, its experimental animals, prepared specimens and cultivations. Of the animals, one had died during the night of the 5th to 6th, according to Dr. Edington's statement, twenty-three days after having contracted rinderpest, and two more were sick. The autopsy, which was made soon afterwards by Mr. Robertson, showed that it had succumbed most probably to a second infection, starting in the tonsils.

A short time after this *post-mortem* examination was finished, at 12.30 p.m., one of the two animals that were sick died. This one was also immediately dissected by Mr. Robertson. This examination revealed the characteristic lesions of rinderpest in a comparatively early stage. Of both these animals dissected, blood. mucus, and pieces of the internal organs were collected and preserved, partly moist and partly dry. In the afternoon we inspected five head of cattle, which in the meantime were brought from Kafir kraals lying westward from the railway-station at Taungs. One of these appeared to be recently attacked. After having purchased the same we withdrew from its left jugular vein a fair amount of blood for experimental purposes.

On the 7th inst. I drove with my companions to the town of Taungs, where I was told I would find a large number of diseased cattle. However, I did not see one beast in the town, as all the cattle were driven by the inhabitants in the mountains. Government Veterinary Surgeon Soga informed me that the people living in Taungs had lost already 20,000 head of cattle from the pest, and thought to save the remainder best by driving them far away. I consequently returned at once to Dr. Edington's experimental station. The animal which we had bought the day before was then killed and dissected. The organs showed the characteristic appearances of rinderpest. From this animal material for examination and infective purposes was likewise taken. After having seen some more cases in an advanced state of rinderpest, and having obtained mucus from a newly diseased animal, I returned during the night from the 7th to the 8th to Kimberley, accompanied by Drs. Turner and Kohlstock, and Mr. Henning.

Twenty head of cattle, twenty sheep, and twenty goats were in the meantime purchased. Of this number eight head of cattle were infected with the material brought from Taungs in such a manner that small sponges soaked in infected liquid were put into the nostrils, and then also the muzzle was painted over with the same sponge. To watch the animals and to superintend the persons employed in connection with the animals, Mr. Henning remained in the compound, and will continue to stay there for the time being.

The fitting up of the house and of the premises are to-day already so far advanced, that I shall be able to commence to-morrow with the establishment of the laboratory. I presume that the latter will be finished at the end of this week or the beginning of next week. I further hope that some of the infected

animals will be diseased at the same time to enable me to begin with my investigations.

Considering the most favourable conditions which the Victorian Compound affords, I intend continuing my research as long as possible within them, and shall consequently remain in Kimberley for the present.

From what I have seen till now of the cattle plague in the Cape Colony, I have no hesitation to say that the disease is the genuine rinderpest. With reference to the micro-organisms found and cultivated by Dr. Edington, I could hitherto not arrive at any definite conclusion. The infection trials performed with these cultivations appear to me not demonstrative, and I must consequently reserve my opinion concerning them until I have personally carried out experiments with them. For this purpose, Dr. Edington very kindly offered me some of his cultivations; he has besides, during my visit in Taungs, done everything in his power which could serve for the furtherance of my research. This I gratefully beg to acknowledge. I have further to thank most heartily for the kind assistance rendered to me by the other gentlemen kindly attached to me by the department. These my thanks above all I consider due to Dr. Turner, who in all directions has looked after our well-being in a most cordial manner.

I trust that with such able assistance my labours will proceed smoothly, and intend reporting further upon them, I hope, before long. I have, &c.

(Signed) R. Koch.

The second report, dated Kimberley, January 3rd, 1897, after detailing the arrangements made for laboratory work and microscopical examinations, proceeds :—

Of the small experimental animals, sheep and goats are sheltered underneath the verandah along the stables, and two dogs are tied up to poles underneath the verandah along the rear wall of the house. Birds, rabbits, mice, guinea pigs, and pigs are housed in cages standing partly alongside the stable walls, and partly in the open sheds. In the latter is also fastened a donkey and a mule, of which the former is only used for experiments, whilst the latter serves at the same time for drawing the trucks and the trolley, upon which dung and the carcases of animals are carried away. These waggons run upon rails, which, passing all the stables and sheds, lead through the northern gate up to a hill lying a distance of some 500 yards from the compound. On the top of the hill is a grave dug, which is 30 ft. long, 10 ft. wide, and 10 ft. deep, and into this carcases and litter of the animals that have succumbed to rinderpest are thrown. Near this grave stands an open tent-like shed for the autopsies, in which are stowed instruments and apparatus required for such work. These examinations are carried out on the space between the shed and the grave in order to have as much light as possible while inspecting the internal organs during their exinteration. The carcases which are deposited in the grave are, in the first place, besprinkled with a layer of burnt lime, and then covered with soil.

Some of the cattle which we experiment on are placed in open boxes (sheds), and some in closed stables provided with double roofs, windows, and the verandah already mentioned. We intend dispensing of the animals in future in such a manner that we keep all animals which have recovered from rinderpest and those which were not yet operated upon apart one from the other outside the yard, whilst those on which we are experimenting will be securely fastened in our open boxes within the yard. As soon as the latter show an elevation of their temperature, indicating the beginning of the disease, we remove them at once into the closed stables, where fæces and other contaminated matter cannot be blown about and carried away. By the aid of this precautionary step I trust to be

able to avoid spontaneous infection. The only case of this description which has as yet occurred concerns an animal that has been standing in an open place alongside the one which first contracted the disease, and was suffering from diarrhœic evacuations, and this at a time when the stalls were not yet partitioned off.

Our various animals are attended to and looked after in a suitable manner, which avoids as much as possible the transfer of infection by an already fairly trained personnel standing under the supervision of Messrs. Henning, O'Donoghue, and Phillips. One and all who have come into contact with any diseased animals disinfect themselves immediately afterwards according to directions given. With reference to the taking of the temperatures, I may also state that this is done in such a way that we consider any chance of transferring the pest impossible. The necessaries required for the regular working of the establishment and its proper maintenance are procured in a praiseworthy manner by Mr. Hutcheon, who is assisted by Mr. O'Donoghue.

To make further observations respecting rinderpest we had on two occasions an excellent opportunity in the neighbourhood of Kimberley, thanks to the negotiations of Mr. Hutcheon and the complaisance of Mr. Roberts, Chief Rinderpest Commissioner in Bloemfontein.

Thus I was enabled to visit on the 22nd of December, accompanied by my two assistants, the farm Tafelkop, which is situated in the Orange Free State, about three-quarters of an hour from the so-called Freetown Gate. There I saw amongst a herd of 120 head of cattle twenty-three animals in the various stages of rinderpest. The owner very kindly gave us permission to kill two animals which were already moribund, and these were dissected by Mr. Henning, together with another one that had meanwhile died. These *post-mortem* examinations revealed that two of these cases were already of elder date, whilst the other was more recent and quite typical of rinderpest. From the living animals we gathered mucus which was dripping from the nose and mouth, and from the dead ones we took bile and blood. We also collected specimens of organs for microscopical and inoculation purposes.

On the 29th December I proceeded a second time to the Free State, close to the border fence. The owner informed us that since rinderpest had broken out, on the 13th ultimo, he had lost thirty-three out of sixty-six head. I had one animal which had succumbed during the previous night examined, and found the appearance of the lesions characteristic of the pest. Amongst those alive were cases in all stages of the disease. A similar case of things we observed on Olifant's Dam Farm, which was situated some distance from the above-mentioned place. There we were informed that the disease had first appeared on the 12th December, and that it had since carried off forty head out of a herd of 140 animals. On this farm we saw four animals that had died during the past twelve hours, and also ten sick ones. A *post-mortem* examination of the beast which had expired last showed in a marked degree in the organs the pathological changes produced by rinderpest. From this animal we simply took with us for further examination some blood. Besides the collection of material for scientific research, both these visits afforded an interesting study of the nature, manner of spreading, and course of rinderpest. During our last drive Mr. Fenn, the Inspector of Border Police in this district, was to me an amiable companion as well as an assistant during the *post-mortem* examinations, which I will not omit gratefully to acknowledge.

Our inoculation experiments performed hitherto had so far chiefly the object in view to discover an efficient method of transmitting the scourge to healthy animals, as the modes formerly in vogue cannot be considered satisfactory in this respect. They consisted in rubbinginto the nostrils or bringing in the subcutis by means of setoning needles excretions from the diseased animal's body, such as slime running from the nose, the watery discharges

from the eyes, and even evacuations from the intestinal canal. In doing so, the result was either uncertain in its consequences or the disease was from the start complicated with sepsis through being introduced into the system septic matter. The correctness of this assumption was also corroborated in my own experiments. As mentioned already in my previous report, we at first put the infective material in the nose and upon the mucous membrane of the mouth. The effect of this was that of eight animals treated in this way with material from Taungs, only one, that afterwards became the starting point for a whole series of experiments, contracted the disease. Of the second batch of animals, three in number, infected with slime from Tatel Kop, likewise only one took the pest. Taking into consideration the experience gathered in former epidemic outbreaks of rinderpest, it occurred to me that a *modus operandi* superior in every respect would be to inject blood hypodermically. For when blood is taken during the earlier stages of rinderpest, it does not contain any septic matter, but simply the contagion of rinderpest. This supposition has at yet shown itself perfectly justifiable. We have inoculated in the dewlap five animals with defibrinated blood, and they contracted the disease without exception after a period of incubation lasting from three to five days. Four of these animals have already succumbed, showing at the autopsy all appearances of rinderpest. One of them recovered after having been very ill, and will be utilised for immunisation experiments.

I purpose in making such successive injections of blood from one animal to another to get a series of infections, which will always supply me with fresh material for examination. We think it best to have two such series, viz., one with material from Taungs, and another one with such brought from Tafel Kop. To make these experiments not too expensive we shall in each series only infect one animal at a time.

Experiments were also made with bile, which was taken from animals that had succumbed to rinderpest, and which we injected in the subcutaneous tissue. The motive for so doing was because a mixture of bile with blood or other liquids was said to be sometimes used by Free State farmers, and also the circumstance that in the bile of most of the cases examined, I have found in pure cultivation a bacterium, which, according to the description published, is conformable with the microbe discovered by Dr. Simpson in Calcutta, and declared to be the cause of rinderpest. All these experiments with bile, however, had negative results.

We are consequently justified in saying that bile does not contain the contagion of rinderpest, and that Simpson's bacteria cannot be considered to be the microbe of rinderpest.

All efforts to find by means of the microscope, as well as through cultivation, a specific micro-organism in the blood, have as yet proved fruitless. I also did not succeed in finding any specific micro-organism amongst the microbes which the mucus from the nose, the secretions from other mucous membranes, and the contents of the intestines naturally contain in large numbers. My examinations having the discovery of the origin of rinderpest in view, will naturally be continued, but the greatest stress must be put upon finding a process by which we are able so to attenuate the virus of rinderpest that we may use it as a preventive. With this object in view, we have inoculated other animals less susceptible for rinderpest, first of all sheep and goats. This was done on the 14th December, when one Cape sheep, one merino sheep, one Angora, and one Cape goat were inoculated with rinderpest blood. These animals did not show any marked symptoms afterwards, but they all suffered after a period of incubation extending two or three days from a rise of temperature identical with that of rinderpest. A second inoculation made on the 7th December with one goat, one Angora, one merino, and one Cape sheep, had the same effect. Having thus proved that by injecting

rinderpest blood a sort of mitigated rinderpest can be produced in the animals mentioned, we infected in second generation on the 24th of December, two more goats, Angoras, merinoes, and Cape sheep. The rise of temperature seen also in these animals, demonstrates that it is possible to propagate this attenuated rinderpest within the system of sheep and goats. After one or two further generations, I shall try to re-transfer this attenuated rinderpest contagion upon healthy cattle. Similar experiments we are jus making, or intend soon to carry out, on antelopes, pigs, asses, mules and dogs.

I further propose to study the susceptibility for rinderpest of as many animals as possible that are suspected in this country to contract the disease or to assist in spreading it. I would in this respect recommend that also camels should be procured, in order to definitely decide upon their immunity against rinderpest or otherwise. Apart from all this, we shall further try if by some other means, viz., through chemical or physical influences, rinderpest blood cannot be rendered useful for preventive measures, that is to say, may be turned into a vaccine.

An opportunity to test carefully the remedies and modes of inoculation in vogue in South Africa against the disease, has not yet offered itself, but I shall after a time inoculate with a virulent material those animals which were first treated with bile, in order to see if rinderpest bile has any protective properties or not.

On one of our visits to the Free Stste, I observed that all animals on the farm were inoculated as a preventive with garlic or "knoflook" into the dewlap, but this procedure had evidently no beneficial result. On another farm the owner had drenched his cattle with a mixture of carbolic and petroleum, but this likewise proved futile.

On the other hand, however, everyone who had had the opportunity of becoming acquainted with the state of affairs along the Free State border in the district of Kimberley, will not hesitate in asserting that the restrictions enforced along this line have fulfilled their purpose. On one side of the boundary there have been for weeks several farms badly visited by rinderpest, and yet the Colonial one is still entirely free from the scourge.

With reference to the rinderpest microbe found by Dr. Edington, I beg to report to you that Dr. Edington has handed to me on the 28th ultimo, a cultivation grown in bouillon, from which he inoculated in my presence two test tubes containing the same medium. Having convinced myself that the culture had been growing in the latter pure and opulent, I inoculated on the 31st ultimo with either of these cultivations one healthy beast, and shall report to you in due time what effect this operation had upon these animals.

I would further like to direct your attention to the circumstance that one of the three animals, the autopsy of which was made in Taungs, was suffering from Texas fever, as we found on the next day when examining the blood. In order to avoid, when making such experiments, any errors that could happen through the disease being combined with Texas fever, we make it a point to examine microscopically the blood of all animals which we use for infective purposes (Potter).

Concerning our South African rinderpest, we have noticed that the symptoms in some respects differ somewhat from the descriptions given by other observers. We have, for instance, found that the escanthema and diphtheritic-like changes on the mucous membrane of the mouth and on the palate are but little marked, whilst the early pathological lesions in the intestines are rather considerable. Thus we have seen thrice amongst ten *post-mortem* examinations fibrinous bloody excretions of the walls of the intestinal tube. The latter has produced coherent masses about a yard long, which formed a sausage-like complete cast of the walls of the intestines, and

surrounded a small canal filled with excrement of a thin fluid nature. The masses mentioned consisted of detached epithelium of the digestive tract, a firm, fibrin-like substance and blood.

What may be the reason of this difference, whether climatical influences or the peculiar breed of cattle, I am at present unable to decide. In all other points, however, the symptoms of the disease do so completely agree with those of the genuine rinderpest that their identity cannot be doubted.

The observation made during the last English epidemic by Burdon-Sanderson, viz., that the beginning of the pest can be recognised by an elevation of temperature several days before other symptoms are manifest, we could confirm in each single case that came under our notice at the experimental station. This is a fact of utmost importance, not only for experimental research, but also for practice, as thus the advent of the disease can be detected already at such a time when no infectious discharges are evacuated and the animal is not yet able to spread the pest. I have, &c.,

(Signed) R. KOCH.

THE PHYSIOLOGICAL ACTION OF EUCAIN.

BY M. CHARTERIS, M.D., PROFESSOR OF MATERIA MEDICA, UNIVERSITY OF GLASGOW, AND WILLIAM MAC LENNAN, M.B., C.M.

EUCAIN, like cocaine, is a methyl ester of a benzoylated-oxypiperidine, carboxylic acid. It is, however, a synthetic product, while cocaine is obtained exclusively from coca leaves; only, in the exhaustion, synthesis has been introduced for the purpose of completely exhausting the cocaine in the leaves.

The formula of cocaine and of eucain is the same.

Eucain, like cocaine, is insoluble in water, or nearly so, but the neutral salts formed by combinations with acids are soluble.

The hydrochloric salt of eucain appears in two forms.

One modification crystallises from water in small shining plates, which contain a molecule of water of crystallisation, and the formula for it is

$$C_{19}H_{27}NO_4HCLH_2O.$$

It dissolves in water to the extent of 6 per cent.

The *second* modification crystallises from a solution in methyl alcohol in shining prisms, which contain two molecules of methyl alcohol in crystallised form.

For anæsthetic purposes the first modification crystallised from water is to be preferred. A solution of it in water differs from a solution of cocaine in water in this respect, that it remains unchanged, while the cocaine solution, after a time, undergoes decomposition.

The appellation "eucain" has no meaning. It is used simply to dispense with the complex chemical nomenclature which has been mentioned.

Eucain hydrochlorate is not so expensive as cocaine hydrochlorate.

Physiological Experiments.

Assisted by Dr. MacLennan, I commenced in May last a series of experiments on the physiological action of solutions of the hydrochlorate of eucain, and solutions of the hydrochlorate of cocaine.

Solutions of these salts were injected hypodermically into guinea-pigs of the same weight, and the results were compared.

At first the quantity used was small, but this was gradually increased, until the lethal dose of each was accurately ascertained.

After repeated experiments, we came to the conclusion that the lethal dose of eucain per kilo body-weight is ·09 gramme; the lethal dose of cocaine per kilo body-weight is ·068 gramme.

We also found that the mode of death by the two substances varied. With the cocaine salt we observed more rotary movements of the head, more opisthotonos, more salivation and more laboured breathing, than with the eucain salt.

It was also noticed that the physiological action produced by a given dose of the eucain salt did not follow nearly so rapidly as that produced by a similar dose of the cocaine salt, under identical conditions with regard to the weight of the animal experimented on.

Hence the action of eucain is slower in onset, and less in intensity.

As illustrating this, we may state that ·0216 gramme of eucain hydrochlorate dissolved in 4 c.c. of water, when injected into a pig weighing 570 grammes, caused only a slight weakness of the hind limbs; the head was not affected.

After the expiry of a week an injection of the same strength of cocaine hydrochlorate was made into the same pig. In the course of half-an-hour there were seen, in the following sequence, clenching of the teeth, rotatory movements of the head, much salivation, quick and shallow respirations. Shortly afterwards, convulsions and opisthotonos occurred, which continued for an hour, after which time recovery was gradual. Recovery was, however, complete at the end of three hours.

After the expiry of another week the same pig had an injection of ·032 gramme of hydrochlorate of eucain in 4 c.c. of water.

In half-an-hour convulsions affecting the body, but with little disturbance to the head, commenced, and continued for 50 minutes. They were in no way so violent as those occasioned by ·0216 gramme of cocaine hydrochlorate; and after the convulsions ceased, recovery was perfect in the course of one hour.

Local Anæsthesia.

Three drops of a solution of hydrochlorate of eucain (1 in 10), when inserted into the eye of a guinea-pig induced in 60 seconds complete anæsthesia of the cornea. The pupil was not affected, and there was no subsequent irritation.

It is apart from the nature of this paper to enter upon the utility of this new local anæsthetic. The clinical observations upon this are as yet meagre. But when used in operations on the eye, the evidence is clear that it has no effect on the pupil. Cocaine, on the other hand, dilates the pupil. Dr. Berger, of Paris, in operation for cataract, employs first a drop of a 1 per cent. solution, and after three minutes a drop of a 2 per cent. solution. This procedure, he says, causes complete anæsthesia of the cornea.

In dental practice it is found that five drops of a solution (1 in 10) injected into the gum before extraction of a tooth are sufficient to render this operation painless.

THE VALUE OF PATHOLOGICAL RESEARCH.

On the occasion of the jubilee of Queen's College, Belfast, the new physiological and pathological laboratories were formally opened by the Lord Lieutenant. On January 20th, the following day, an address of welcome and

congratulation was presented to Lord Lister, who, after receiving it, spoke as follows:—

It gave me very great pleasure to witness the opening of the physiological and pathological laboratories yesterday by His Excellency the Lord Lieutenant. Such an establishment is calculated to be of enormous advantage to the North of Ireland. The benefits which it will confer will be of various kinds. In the first place, it will be of very great assistance to the medical practitioner in forming his diagnosis of the disease of the patient he has to treat. In these days the knowledge of pathology has made immense advances; and, at the same time, along with those advances in pathological knowledge, there has arisen increased complexity in the methods of examining pathological objects. Section cutting, staining, microscopic examination—these are matters of the utmost moment; and yet for the general practitioner there may be neither the apparatus nor the time requisite for that kind of investigation. It will, therefore, be of great advantage to the practitioner, when he has removed or in any way obtained a portion of a morbid growth, to send it to a central institution, and have absolutely definite information as to the precise nature of the disease with which he has to deal. Then, as regards the bacteriological department—there, again, diagnosis will be greatly facilitated. You are most of you aware that the diagnosis of diphtheria can now be made by bacteriological examination. It is of the utmost importance in the treatment of a case of diphtheria that its nature should be distinctly defined; that it should be known with certainty whether it is true diphtheria or a disease which closely simulates it, and may deceive the most experienced practitioner, and yet have none of the deadly characteristics of true diphtheria. Now, for the future, any medical man in the North of Ireland will only have to send, in a suitable tube, which will be provided by the institution, a little of the false membrane in the case with which he is dealing, and in a very short time he will have sent to him a bacteriologically made diagnosis of whether it is a case of true diphtheria or not. Again, with reference to what is more immediately connected with the objects of this college, such an institute will be of great help in the training of students in their education for the medical profession. In it the student will have the opportunity of practically studying the various forms of morbid growths and diseases which are of the nature of microbes. These are days when the subjects of medical examination are becoming more and more complex, and the student is too much tempted to get up his knowledge in a superficial way, cramming to satisfy the examiner, rather than to obtain thorough-going practical information. That is more especially the case when the student is not examined by his own teachers, under whom he might work with some confidence that his labour would not be thrown away with reference to that really subordinate, but in his eyes vastly important, matter of the passing of his examination. May I venture to interpose a remark on that point, and to express the hope that the time is not very far distant when the great northern metropolis of Ireland will have its own university, a true teaching and graduating university, on the same lines as most of the German universities and the Scotch. But passing from that, independently altogether of the difficulty a student may have in preparing for examination by strangers, the great complexity of the subjects of medical education makes it extremely important that there should be afforded ample opportunities of practical study The bacteriological department will be of peculiar value in the education of the student. It will in the first place convince him of the reality of the microscopic foes with which we have at the present day so largely to deal—the microbes, which are the cause of so large a proportion of human disease. He will not only read that such things are, and when he gets into practice perhaps forget that they exist, but he will know them as acquaintances. He

will see the evidence not only of their existence, but also of their effects. The bacteriological training will besides be of special advantage in teaching the student accurate observation and also dexterity of manipulation—both most important matters in a medical man's practice. If a student is told to prepare a culture of a particular microbe in a state of purity, in order to do that he must be very sharp indeed in his observations, and very clever, too, in his manipulations; and if he fails, the fact will very soon declare itself. There will be an impure culture, and instead of having only the one microbe he wished to cultivate, with its well-known special characteristics, it will be seen that he has allowed others to get in at the same time. His own imperfections will thus declare themselves; but he will persevere, and go on and on until he becomes perfectly competent to produce a pure culture. This will be of great importance in his education. There is another aspect of a pathological institute which I feel some delicacy in alluding to, because there are some people who take strange views with regard to these matters—exaggerated views. there are people who do not object to eating a mutton chop—people who do not even object to shooting a pheasant with the considerable chance that it may be only wounded and may have to die after lingering in pain, unable to obtain its proper nutriment—and yet who consider it something monstrous to introduce under the skin of a ginuea-pig a little inoculation of some microbe to ascertain its action. Those seem to me to be most inconsistent views. With regard to all matters in which we are concerned in this world, everything depends upon the motive. A murderer may cut a man's throat to kill him; any one of you medical students may have to cut a man's throat to save his life. The father who chastises his son for the sake of the good of his morals is a most humane man; a father who should beat his son for the mere sake of inflicting pain upon him would be an inhuman monster. And so it is with the necessary experiments upon lower animals. If they were made, as some people seem to assume, for the mere sport of the thing, they would be indeed to be deprecated and decried; but if they are made with the wholly noble object of not only increasing human knowledge, but also diminishing human suffering, then I hold that such investigations are deserving of all praise. Those little know who speak lightly on these matters how much self-denial is required in the prosecution of such researches when they are conducted, as indeed they always are, so far as I am aware, with the object of establishing new truth. The exercise of a little charity might lead those who speak of us as inhuman to reflect that possibly we may be as humane as themselves. The profession to which I have the great honour to belong is, I firmly believe. on the average, the most humane of all professions. The medical student may be sometimes a rough diamond; but when he comes to have personal charge of patients, and to have the life and health of a fellow creature depending upon his individual care, he becomes a changed man, and from that day forth his life becomes a constant exercise of beneficence. With that beneficence there is associated benevolence; and, in that practical way, our profession becomes the most benevolent of all. If our detractors knew this, common sense would enable them to see that our profession would not be unanimously in favour of these researches if they were the iniquitous things which they are sometimes represented to be. I was reading the other day a very interesting account of Pasteur's work on rabies, written by one who was associated with him from an early period (M. Duclaux). It had been established that the introduction of a portion of the brain of a mad dog under the skin of a healthy animal was liable to cause rabies, and Pasteur had reason to believe that it was principally in the nervous centres that the poison accumulated. He felt a very strong desire to introduce some of the poison into the brain of an animal; but he was a particularly humane man. He never could shoot an

animal for sport. He was more humane than the great majority of human beings; and for a long time he could not bring himself to make the experiment of trephining an animal's skull, and introducing some of the poison of rabies into the brain. He was exceedingly desirous of doing it to establish the pathology of the disease, but he shrank from it. On one occasion, when he was absent from home, one of his assistants did the experiment, and when Pasteur came back he told him that he had done so. "Oh," said Pasteur, "the poor creature. His brain has been touched. I am afraid he will be affected with paralysis." The assistant went into a neighbouring room and brought in the animal which was a dog. It came in frisking about and investigating everything in a perfectly natural manner; and Pasteur was exceedingly pleased, and though he did not like dogs, yet he lavished his affection on that particular animal and petted it; and from that time forth he felt his scruples need no longer exist. The truth is that the pain inflicted by this process of trephining is exceedingly slight, and yet the operation is sometimes described as being a hideously painful one. That is a mistake. In point of fact, the operation is always done now under anæsthetics, so that the animal does not feel it at all; but even without that the operation is not seriously painful. I look forward to the time when there will be an institute in connection with this college, where investigations of the kind to which I have referred can be carried on, and where pathological knowledge of the first importance may be promoted. Think also of the practical advantages of an institution where the materials can be provided for the treatment of diseases on the principles which have been recently established. It appears to be now placed beyond doubt that that dreadful disease diphtheria may by the antitoxic treatment be reduced in mortality from about 30 per cent. to about 5 per cent. if the proper material is promptly used. It is exceedingly important that in a city like Belfast the supply of such material should be within easy reach of the practitioner—that he should not be compelled to send to London for the requisite serum, and thus lose much valuable time. Every hour that is lost in the treatment of a case of this nature is a very serious loss indeed. But it is by no means only in diphtheria that such an institute is likely to confer benefits of this kind. In the case of the streptococcus, which is the cause of erysipelas and kindred disorders, including that very terrible disease, puerperal fever, there are very promising indications that the use of antitoxic serum will rescue patients from otherwise hopeless conditions. Let any one picture to himself the case of a young wife after her first confinement afflicted with this dreadful puerperal fever, and doomed under ordinary treatment to certain death. The practitioner makes an injection of this serum under the skin, with the result that the lady rapidly recovers, and in a few days is perfectly well. Let any man conceive such a case as this, and all objections to the investigations necessary to bring about such a state of things must vanish into thin air. So soon as our poor selves are directly concerned our objections disappear. If a tiger threatened to attack a camp, who would care much about what kind of a trap was set for it, or what suffering the trap caused the animal, so long as it was caught? When the matter affects only the welfare of others, including generations yet unborn, the good done does not appeal to the individual, and the objector sees only the horrors of modern scientific investigation; of which horrors, however, he quickly loses the sense as soon as he becomes personally concerned.

On the occasion of the funeral of that illustrious investigator to whom I have before referred, I visited the Institut Pasteur, and there was shown preparations of the microbe of the plague discovered at Hong Kong in 1894 by M. Yersin. And I was told by M. Roux, that Yersin, whom he knew intimately as formerly his colleague, had lately been treating in China several

cases of that fearful disease with serum prepared at the Institut Pasteur on the same lines as that used for diphtheria. Cultures of the plague bacillus had been taken to Paris, and at the Institut, under the most rigorous precautions, the serum had been prepared. At the Institut they did not think they had succeeded in producing a very powerful serum, judging from its action on animals; but in the human subject it seems to have proved most potent. M. Yersin obtained serum sufficient for the treatment of twenty-six cases of the plague. The mortality from the disease at the time was above 80 per cent. The first case which he treated was that of a young man, in whom a "bubo," characteristic of the disease, was present, and the patient, already delirious, was completely despaired of. A little of the serum was introduced, and, to M. Yersin's absolute amazement, on the following day the young man was well, the bubo having almost entirely disappeared. And, moreover, of the twenty-six cases in which M. Yersin used the serum, twenty-four recovered; while in the remaining two Yersin felt that he was called in so late that their cases were hopeless. I would not have referred to these facts did I not know that the person from whom they were obtained was absolutely trustworthy. We cannot tell how soon the plague may visit these shores. We know that in one of our great dependencies—Bombay—it is already prevalent in a very severe form,and has already cost many lives. We know that a ship may carry the disease; that rats are liable to contract it, and that a rat making its escape from a ship coming from Bombay, say, to the Thames or to Belfast Lough, may carry the plague ashore, and that the taint may be communicated to human beings, with dreadful results. I would not say that there are not slums in the city of Belfast which might harbour the plague. So you can easily recognise how vastly important it would be to have means at hand whereby, in the simple way I have described, the disease may be combated. I have, I think, said enough to show the vast importance of an institute of such a character, and I look forward to the time when you will have such an establishment thoroughly equipped for it beneficent work.

There is another department in connection with medical education in this city about which I cannot speak in the same terms of praise as I can with reference to the new laboratories, and that is the hospital. No doubt the Royal Hospital, which I had the honour of visiting for the first time yesterday, is a fine institution; but it is altogether inadequate to the requirements of this great and rapidly-growing city. It is inadequate, whether for affording means of clinical instruction to students or for dealing with the diseases of your large and increasing population. But I am glad to know there is a prospect of better things before long. I understand that it has been not merely contemplated, but determined, to build a large new hospital provided the requisite funds can be obtained; and I have been informed that within six weeks of the initiation of the movement more than half the necessary sum has been raised. I have no doubt that the munificence of the merchant princes of Belfast will soon provide the balance. Therefore, whichever way I look at this jubilee, I feel that the College, more particularly with regard to its medical school, is entering upon a new era of prosperity. I rejoice with you in the fact, and I have felt it a great privilege to take part in your celebration.

EXPERIMENTAL AND CLINICAL STUDY OF THE ASPERGILLUS FUMIGATUS.

(Contributed to the *Bulletin de la Société Centrale de Medecine Véterinaire.*)

BY A. LUCAT.

I.—*Generalities.*

AFTER the three observations I had made one after another in 1891, and the cultivations to which they had led, I rapidly found myself face to face with

three specimens of different origin, yet of the same kind of mould, the *Aspergillus fumigatus*. This difference of origin caused me, in the first instance, to investigate if the passage of the parasite through dissimilar organisms had not had influence on its pathogenic power, and if the virulence of each of my samples was identical. Consequently, on the 22nd August, 1894, I proceeded to comparative inoculations. At six in the evening I inoculated into the circulatory current of three young geese of the same brood, and three young rabbits six months old, of a perceptibly equal weight, a strong emulsion of spores collected in the following way: By the help of a small spatula of platinum, previously sterilised, I had raised in three cultivations on potato, of the same age and the same series, kept and preserved at 37°, cent. and proceeding from the cow, the goose, and the hen-pheasant previously noticed in my papers, a dose of seed, each dose being approximately equal. Each of these cultures was emulsioned by shaking in four cubic centimetres of sterilised beef bouillon, then inoculated, in a dose of two cubic centimetres, into a goose and a rabbit. The results obtained differed slightly. The rabbit and the goose inoculated with the aspergillus of the cow succumbed; the first in five days, the second in eight. With the aspergillus of the goose, death occurred for the rabbit in seven, for the goose in nine days. As for the aspergillus of the pheasant, it brought on the death of the rabbit in six days, and of the goose in nine days.

In each of the inoculated species the lesions were identical, whatever the seed employed. With the goose, they consisted of granulations, miliary for the most part, infiltrating the liver alone. With the rabbit, they were still caused by tubercles, but at the same time they were more voluminous and spreading a little in every direction—in the liver, the kidneys (where they attained their maximum volume), in the muscular tissue, in the interior of the intestinal coats, in the myocardium, etc. Further, cultures made in different media—by the aid of the hepatic pulp for the goose and the caseous substance of the great tubercles of the kidney for the rabbit—all furnished a mould similar to the one whose spores had been inoculated into the animals. From these first researches a fact important enough to know resulted; that, in spite of their diversity of origin, my samples of aspergillus fumigatus possessed an equal pathogenic power.

When, in 1894, I again happened to meet with the same fungus, at one time in the horse, at another time in duck's eggs, submitted to incubation, I proceeded in these two cases also with recent cultures, of the same age and obtained on the same medium and at the same temperature, to a new series of comparative experiments.

On the 10th of October, two healthy adult rabbits received, in a vein of the ear, two cubic centimetres of sterilised veal bouillon, holding in suspense an enormous quantity of spores furnished by the aspergillus of the horse. In addition to this, two other rabbits of the same litter and of perceptibly equal weight, were inoculated under the same conditions with seed of the aspergillus of the eggs. The results were identical. All my animals died in the course of from four to six days from accentuated mycotic lesions of the liver and the kidneys—lesions which, on cultivation, produced the mould that had been inoculated.

Finally, on the 30th of October, 1894, always on the same principle, I introduced into the venous system of three other rabbits of the same age, an approximately equal dose of spores of Aspergillus fumigatus. The first was obtained from a culture in Raulin's liquid, received with the aspergillus of the eggs, fifteen days old, and kept all this time at a temperature of 45° cent.; the second from a culture on potato, furnished by the aspergillus of the horse—this a month old, and kept since its origin in a stove heated to 30°; the third, from a culture on potato, dating from the month of December, 1891,

proceeding from the aspergillus of the goose, and kept at the temperature of the laboratory. Even under these conditions, the death of my inoculated animals occurred within the same space of time, with identical lesions, all of them reproducing, by culture in an artificlal medium, aspergillus fumigatus.

In all these experiments I had as yet made use of samples which, though of different origin, had nevertheless all passed through an animal organism, and might, from this fact, have acquired virulent properties. It still remained to be investigated whether this fungus grown on the vegetable matter on which it generally shoots up possessed the same properties. Accordingly, in the course of the summer of 1895, I tried to gather some of it on plants ordinarily cultivated, such as wheat, barley, rye, and oats, etc. As will be seen further on, this was easy for me.

On the 25th July, 1895, I inoculated, into a vein of the ear, two rabbits five months old, as follows: one with a culture on potato furnished by the aspergillus of the horse, and four months old; the other with a culture dating from the 1st of July, and obtained by sowing in Raulin's liquid spores collected on a mildewed barley-leaf which I had gathered with others from a crop still standing. Both rabbits died on the sixth day, and presented lesions of the liver and kidneys—lesions which microscopic examination showed to be identical, and which cultures on an artificial medium, showed to have been caused by the same parasite—the aspergillus fumigatus.

This regularity of results obtained in all the comparative experiments cited above, made successively with varied seed, gathered at random, indicated already not only that the animal *or* vegetable origin of the aspergillus fumigatus was of no account in its pathogenic action, but also that this action, being inherent in the fungus itself, was capable of being preserved for a very long time.

At the same time that I was pursuing, by fits and starts and as chance offered, researches whose results have just been seen, I was attacking the biological and experimental study of this parasite. I studied its characteristics and the way it behaved in natural and artificial media of culture, its resistance to causes of destruction either spontaneous or artificial, its pathogenic action in different animals, and I frequently investigated its existence in matters serving for the ordinary sustenance of animals and the means best suited to oppose the diseases which it produces this third chapter therefore comprises several paragraphs.

How to Distinguish the Smegma Bacillus from the Tubercle Bacillus.—Grethe (*Fortschr. der Med.*, May, 1896), points out the need of some simple method of differentiating the smegma bacillus from the tubercle. The inability to distinguish between these two germs has led to serious results in a number of instances; in one case a supposed tubercular kidney was removed, but upon subsequent examination it was found that there was present only calculous pyelitis. In this case supposed tubercle bacilli were found in the urine. A number of other cases have been reported in which similar errors have occurred. Grethe has found that reliable results are obtained by standing with a concentrated alcoholic methylene blue. This stains the smegma bacillus well; and if the preparation be first stained in the ordinary manner with carbol fuchsin, the tubercle bacillus, if present, is easily identified by its red colour contrasting with the the blue of the rest of the preparation, including the smegma bacillus.

Cohn says a single germ is capable, under good conditions, of multiplying in three days to 4,772,000,000,000,000, thus making a mass weighing 7,500 tons.

REGULATIONS FOR ADMISSION TO THE ARMY VETERINARY DEPARTMENT, 1897.

ISSUED WITH ARMY ORDERS, DATED 1ST JANUARY, 1897.

THE following regulations will be observed in the appointment of qualified candidates to the Army Veterinary Department. The rates of pay and rules regarding the promotion and retirement of veterinary officers are laid down in the Royal Warrant for Pay, &c.

I.—QUALIFICATIONS OF CANDIDATES.

1. Candidates for admission must make a written application to the Under-Secretary of State, War Office, London, and a personal interview with the Director-General, Army Veterinary Department, will be necessary.

2. The minimum age of candidates is 21 years, and the maximum age 27 years, except in very special cases or on urgent occasions, when the latter limit may be exceeded. Candidates must be unmarried, and will not be accepted unless in the opinion of the Commander-in-Chief they are in all respects suitable to hold commissions in the army.

3. Every candidate must be a Member of the Royal College of Veterinary Surgeons, and pass an examination before a Board of army veterinary officers.

4. He will be required to forward the following certificates, prior to examination :—

(*a*) A certificate of birth or baptism, or other satisfactory proof of age.

(*b*) Certificates of moral character from clergymen or others in a position to testify, and whose evidence may be deemed satisfactory; also from the principal and professors of the college at which the candidate has been professionally educated.

5. Examinations will be held on vacancies occurring, and candidates who have obtained the qualifying number of marks will receive commissions according to the order of merit in which they pass.

6. A candidate is liable to be rejected if he shows any deficiency in his general education, as evinced by bad spelling or composition.

II.—EXAMINATIONS.

7. Every candidate will be inspected by a Medical Board. For the rules as to the examination of candidates, see Appendix I.

8. The professional examination will be in two parts, written and practical. The written examination will embrace the following subjects :—

(*a*) Anatomy.
(*b*) Physiology.
(*c*) Histology.
(*d*) Pathology, horse.
(*e*) Pathology, cattle.
(*f*) Surgery.
(*g*) Chemistry.
(*h*) Materia Medica.
(*i*) Toxicology.
(*j*) Botany.
(*k*) Hygiene.
(*l*) Dietetics.
(*m*) Principles of shoeing.

The practical examination will be conducted by a Board of Veterinary Officers, and will include :—

(*a*) Examination of horses as to soundness, and certificates thereon.
(*b*) Examination of horses as to age.
(*c*) Exterior of the horse, with regard to points, marks, seat of disease, conformation necessary for different kinds of military service, &c.
(*d*) Operations.
(*e*) Prescribing, compounding, and administering medicine.
(*f*) Lameness.
(*g*) Clinical diagnosis.
(*h*) Cattle.

III.—RANKS.

(*Extract from the Royal Warrant for Pay, &c.*, 1896.)

"319. The substantive ranks of the officers of Our Army Veterinary Department shall be as follows:—

Veterinary-Colonel.
Veterinary-Lieutenant-Colonel.
Veterinary-Major.
Veterinary-Captain.
Veterinary-Lieutenant.

"The Director-General of Our Army Veterinary Department shall hold the substantive rank of veterinary-colonel."

IV.—APPOINTMENT, TENURE, AND PROMOTION.

9. No veterinary-lieutenant shall be entitled to remain in the service for more than ten years unless he is selected for retention by the Commander-in-Chief, on the recommendation of the Director-General, and with the approval of the Secretary of State.

10. A veterinary-lieutenant may, if selected for retention in the service under paragraph 9, and recommended for promotion on the ground of ability and merit, be promoted to the rank of veterinary-captain on completing ten years' commissioned service on full pay, including at least three years abroad; and a veterinary-captain shall be promoted to the rank of veterinary-major on completing ten years' commissioned service on full pay as veterinary-captain.

(*Extracts from the Royal Warrant for Pay, &c.*, 1896.)

"431. A candidate who has proved after examination that he possesses a competent knowledge of the required subjects, shall be appointed a veterinary officer on probation for a period of six months, at the expiration of which period, if his probationary service has been satisfactory, he shall, on the recommendation of the Director-General, and with the approval of our Commander-in-Chief, receive a commission as veterinary-lieutenant, and the commission shall be antedated so as to embrace the period which the veterinary-lieutenant has passed on probation. If his probationary service has not been satisfactory, his services shall be dispensed with, and he shall have no further claim on the department.

"433. The appointment of director-general of our Army Veterinary Department shall be for seven years.

"436. A veterinary-major shall not be eligible for promotion to a vacancy in the rank of veterinary lieutenant-colonel until he completes 15 years' commissioned service on full pay (subject to Article 328), three of which must have been in India.

"438. Should it in any particular case be considered that the interests of the public service would be materially advanced by the retention of a veterinary-lieutenant-colonel on the active list beyond the age fixed for retirement under Article 586, the age for the retirement of such veterinary-lieutenant-colonel shall be extended to 60.

"326. Unless express provision to the contrary is made in this section of this Our Warrant, every promotion of a departmental officer shall be given by selection upon the recommendation of our Commander-in-Chief, with the approval of our Secretary of State, on the ground of ability and merit, due consideration being given, however, to length of efficient service. The grounds for such selection shall be stated to us in writing.

"328. A departmental officer, in cases where promotion is granted irrespectively of establishment, and is conditional on the completion of a fixed period of service, shall reckon towards his promotion any time, not exceeding one year, during which he may have been on half-pay on account of ill-health caused by military service; and also at any time not exceeding two years, during which he may have been on half-pay on reduction. A departmental officer shall, while seconded under Article 468, continue to be eligible for selection for promotion precisely as if he had remained on the departmental establishment, and his service, while seconded, shall reckon towards such promotion."

V.—Pay and Charge Pay.

(*Extract from the Royal Warrant for Pay, &c.*, 1896.)

Pay.

"439. The following shall be the rates of pay and charge pay, of the officers of Our Army Veterinary Department:—

	Yearly Rate. £ s. d.
Director-General, Army Veterinary Department (without allowances other than for travelling)	850 0 0
	Daily. £ s. d.
Veterinary-Lieutenant-Colonel	1 5 0
After 25 years' service	1 7 0
„ 30 „	1 10 0
Veterinary-major or veterinary-captain	0 15 6
After 5 years' service in the rank or ranks of veterinary-captain or veterinary-major	0 17 6
After 10 years' service in the rank or ranks of veterinary-captain or veterinary-major	1 0 0
After 15 years' service in that rank or ranks ..	1 2 0
After 30 years' total service	1 4 0
Veterinary-lieutenant on appointment, £250 a year.	

Charge Pay.

With an Army in the Field—
The senior veterinary officer, if the total number of animals attached to the troops is 5,000 or upwards .. Daily 5s.
In a command abroad—
The veterinary officer in sole charge of mounted troops of Our Regular Forces, if the total number of animals attached to the troops is 1,500 or upwards .. Daily 5s.
In a command at home—
The veterinary officers employed with the army remount and registration establishment .. .. .. Daily 5s.

[In addition to the above rates of pay veterinary officers are granted quarters, fuel, light, forage, and servants, or money allowance in lieu.]"

(*To be continued.*)

ON THE RELATIONSHIP OF THE LIVER TO FATS.

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THE liver is on the direct channel of absorption of carbohydrates and proteids, and its connection with the metabolism of these substances has been fully demonstrated.

It is not on the channel of absorption of fats, and its relationship to the metabolism of fats has never been systematically investigated.

The object of the present research is to elucidate this question.

The first part of the paper is concerned with an investigation into the methods of estimating the fats. It is shown that after complete extraction with ether, by treating the residue with hydrochloric acid and heat, a further amount of material may be extracted by ether, but that it is impossible to say how far this is composed of the fatty acids previously combined with bases as soaps, and how far from the decomposition of nuclein bodies. The present research, therefore, is concerned simply with the fats extracted by ether.

It is next shown that the ether extract is no fair measure of the amount of fats present, since it contains on an average only 57 per cent. of fatty acids. In estimating the amount of fats, it is necessary to determine the fatty acids, and not merely the ether extract. The fatty acids amount to between 2 and 3 per cent. of the liver substance.

In the liver the proportion of palmitic and stearic acids to oleic acid is shown to be markedly higher than in the fats of the rest of the body. Hence the liver fat has a high melting-point.

As regards the nature of the compounds of these fatty acids, it is found that one of the most important is lecithin. About one-half of the acids is usually combined in this substance. About 2·3 per cent. of the liver, or 10 per cent. of its dry solids, is composed of lecithin. When fat accumulates in the liver, the proportion of lecithin falls. In connection with the function of this hepatic lecithin, the part played by lecithin in the egg, as the store material for the phosphorus of the embryo, is pointed out, and it is concluded that the function of the hepatic lecithin is to fix phosphorus as a step towards its synthesis into the nucleo-compounds of the body.

The possibility of determining the amount of free fatty acids in the ether extract of the liver is considered, and it is shown that Hofmann's conclusions are valueless.

The amount of cholesterin is found to be smaller than that indicated by Kausch: in rabbits there is an average of 0·039 per cent., and in cats 0·029 per cent. of the liver. In estimating the fatty acids, the cholesterin may thus be disregarded.

The percentage of ether extract not combined with fatty acids is shown to vary greatly. On an average it amounts to 10 per cent. The nature of this is not considered.

Taking the fatty acids as a measure of the amount of fats, the influence of various conditions on the liver fats is investigated.

A. *Starvation.*

It is shown that after three days' starvation in cats, and after four days' in pigeons, the average amount of fatty acids in the liver is maintained. The importance of this in fixing waste phosphorus as lecithin as a step to its reconversion to nucleo-compounds is indicated.

B. *Influence of various Foods.*

1. *Fats.*—That the fats of the food are largely stored in the liver of certain animals is shown by experiments on cats and rats. That when so stored they are afterwards (in cats in about seventy hours) either metabolised in that organ or exported from it, as already shown. That the former process goes on was indicated in considering the function of lecithin.

2. *Carbohydrates.*—The generally accepted statement that the amount of glycogen and fat corresponds is disproved. Food rich in carbohydrates is shown to increase the liver fats. The question of the source of these fats is investigated, and it is shown that as the glycogen disappears from the liver there is an *actual* increase in the liver fats. That this is not a transport of body fats to the liver is indicated by the fact that the blood serum remains clear, and that the melting-point of the liver fats does not fall, as would be expected if the body fats with their lower melting-point were added. It is, therefore, concluded that the fats are formed from the glycogen.

3. *Proteids.*—The evidence of the production of fats from proteids is considered. The evidence of the proteids of the food being a source of fat in the liver is investigated. The evidence opposes the view that liver fats are formed from proteids.

Legal News.

LEGAL ACTION AS TO THE AGE OF A HORSE.

RECENTLY an action was raised in the Stirling Sheriff Court at the instance of Mr. John Yuille, Clachanry, against Mr. David Thomas, Drumstean, Balfron, for a sum of £34, being the price of a colt. Sheriff Buntine has now issued the following judgment in favour of pursuer, who fully explains the case.

Stirling, 5th January, 1897.

Having heard parties' procurators on the proof and whole process, and made avizandum, finds in fact—(1); That on 15th September last the pursuer sold the horse libelled to the defender at the price of £34, and that defender took delivery on the same day; (2); That the pursuer stated that the horse was three years old off, and did *not* state that "Rosedale" was his sire; (3) That the pursuer believed, and had reason to believe, that the representation of the horse's age was true, on the authority of the breeder, from whom he had himself purchased the horse a few days before; (4); That the pursuer gave *no* express warranty of the horse, and particularly that he gave no express warranty of its age or breeding; finds in law that the defender, in these circumstances, has no just reason for refusing to pay the price of the horse. Therefore decerns against him for payment of the sum of £34, finds the pursuer entitled to expenses of process, for which further decerns against the defender.

(Signed) J. R. BUNTINE.

Note.—In this case the defender refuses to pay the price of a horse which he purchased from the pursuer at Balloch Fair, on the ground that the horse was sold as a three-year-old and a get of "Rosedale," whereas he is four years old and the get of a horse called "Mountain King." It is to be observed that the defender does not allege that the representations of the age and breeding of the animal were made in the knowledge of the pursuer, nor had he an express warranty of the horse. The Sheriff-Substitute is of opinion, therefore, that the defence, as stated, is irrelevant. The law of Scotland as regards warranty was assimilated to that of England by the Mercantile Law Amendments Act of 1856. As it now stands, a purchaser who can prove false and fraudulent representations on the part of the seller which induced him to make the contract, is entitled to repudiate the bargain. No such case is alleged here. It is conclusively proved that the pursuer had every reason to believe in the truth of the representation which

he made of the horse's age, while in the opinion of the Substitute it is *not* proved that he made any representation about its breeding. Section 5 of the Mercantile Law Amendment Act, however, defies the rights of a purchaser where the seller has not been guilty of intentional or fraudulent false representations. It is as follows:—"Where goods shall, after the passing of this Act, be sold, the seller, if, at the time of the sale, he was without knowledge that the same were defective or of bad quality, shall not be held to have warranted their quality or sufficiency, but the goods with all faults shall be at the risk of the purchaser, unless the seller shall have given an express warranty of the quality or sufficiency of such goods, or unless the goods have been expressly sold for a specified and particular purpose, in which case the seller shall be considered, without such warranty to warrant that the same are fit for such purpose." It is not contended that this horse was sold for a specified or particular purpose. The Sheriff-Substitute is of opinion that it is *not* proved that the pursuer gave an "express warranty" of any kind. The pursuer himself states that he gave *no* warranty of the horse; neither the defender nor his brother state that he did. Their evidence merely amounts to this, that pursuer said that the horse was a three-year-old, and in answer to the question—Was it a "Rosedale?" answered, Yes. The meaning of the words "express warranty" is a warranty in "express terms," and in the absence of writing these terms must be sufficiently proved. See Lord Justice Clerk (Inglis') opinion, Mackie and Liddell, 2 R. 117, and the case of Robertson and Waugh, same volume of Rettie, p. 63. In the present case it would be ridiculous to suppose that a seller who gave *no* general warranty of soundness would give a warranty of facts beyond his own knowledge. In any view all the pursuer could have warranted here was that he had the authority of the breeder for saying that the horse was three years old and the son of "Rosedale." But no warranty in express terms has been proved at all, and the Sheriff-Substitute is clear that none was given. This view of the case renders it unnecessary to decide what was the true age of this horse, which perhaps on the evidence might not have been an easy task.

(Inti.) J. R. B.

A COW WARRANTY CASE.

In the Forfar Sheriff Court on Thursday, proof was led in an action raised by Mr. Thomson, farmer, Easter Meathie, against Mr. Alexander Deuchar, cattle dealer, Forfar, concluding for the sum of £11 10s., being the price of a cow bought by pursuer from defender, and which was not conform to warranty. The pursuer bought the cow on the Monday at Messrs. Scott & Graham's sale, where she was sold under a warranty of being "calved and correct. On the Wednesday following the animal was observed to be in great pain, and Mr. Thomson then saw that the after-birth had not come way. He drove to Forfar, and saw Messrs. Scott & Graham on the subject, and took out Mr. T. M. Inglis, M.R.C.V.S., to see the animal. Mr. Inglis deponed that he found the animal in great pain, and suffering from severe inflammation of the womb. He removed the after-birth, as that was necessary for saving the animal's life. Had he not done so she would have died during the night from collapse. As it was, she died shortly afterwards from shock, inflammation, and blood-poisoning. Ex-Provost Doig, who has had a large practical experience in cows, said that a cow was not "correct" if the after-birth had not come away in due time. For the defence, Mr. Clark, V-S. Coupar-Angus, and Mr. Tait, V.S., Forfar, declared that a cow, although the after-birth was not discharged, might be in perfectly "correct" condition as a milker. After

other witnesses had been examined, the Sheriff took the case to avizandum. Since then his Lordship has issued his decision in the case. He finds that upon the evidence adduced no well-known fixed meaning could be put upon the words "calved and correct." He must, therefore, construe them for himself as best he could, aided by the printed conditions of sale produced. He found that a cow sold within twenty-four hours after it had calved, which had retained the after-birth, and died in a week from inflammation in consequence (as the cow in question undoubtedly did), could not be held to have been "calved and correct" at the date of sale. He found that the pursuer took all proper care and used all proper means for the cow's safety, including the employment of the veterinary surgeon, Mr. Inglis. He, therefore, granted decree against the defender as concluded for, and found the pursuer entitled to expenses.

Army Veterinary Department.

Extract from *London Gazette*, dated 3rd February, 1897 :—Volunteer Corps 1st Fifeshire Light Horse—" J. Maclauchlan Young, Gent., to be Veterinary-Lieutenant. Dated 3rd February, 1897."

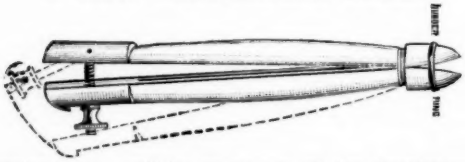
Movements.—Veterinary-Major R. Rowe proceeded to Portsmouth from London on 8th instant.

Veterinary-Captain J. A. Nunn, C.I.E., D.S.O., is transferred from Woolwich to London for duty.

Veterinary-Major B. L. Glover and Veterinary-Lieutenant J. D. E. Holmes embarked on the 9th inst. for a tour of service in India.

Arrival.—Veterinary-Lieutenant A. Smith arrived from India on the 19th instant, on six months' sick leave of absence.

A NEW CASTRATING CLAM.



As the castrating season will be soon upon us, the description of a clam which I have devised and used with great success in the standing operation for several seasons, may be appreciated by those who adopt that method. It is much lighter and more easily manipulated than the clams at present in use. It is worked by means of a screw-nut, which entirely obviates the necessity of clamp-forceps, india-rubber band, ferrule or string. When the fibrous tissues have been once cut through, the clam applied to the spermatic cord, and the testicle removed, all danger of hæmorrhage ceases. An additional advantage attending the use of this clam, is that upon the day following the operation, it may be taken from its place without the inconvenience attending the removal of the ferrule or cord upon which at present the blood is apt to coagulate. The clam is made by Mr. Huish, of Fisher Street, Red Lion Square, who suggested and applied a much lighter and quick-running screw-nut than my original pattern.

Yours truly,

AMOS WILKINSON, M.R.C.V.S.

NEWPORT PAGNELL.

Extracts from Foreign Journals.

EPIZOOTIC ABORTION IN CATTLE.

PROFESSOR BANG, of Copenhagen, states that he was called in to examine cattle on an estate in Denmark where this disease had broken out. One cow which showed all the symptoms of approaching abortion he ordered to be slaughtered, and he gave orders that the vagina should be tied up with an elastic ligature. The uterine apparatus thus fastened was brought to his laboratory and examined six hours after death. The outer surface showed nothing abnormal; the cervix was closed and contained the usual thick slime. Between the mucous membrane of the uterus and the fœtus there was a copious supply of thinnish yellow liquid, dull and viscous in quality. A gelatinous œdema had overspread the delicate connective tissue between the vascular surface and the external surface of the allantoid to a thickness of 1½ centimetres. The umbilical cord was œdematous. In the exudate lying on the outside of the fœtal envelope there was found in the very first glass preparation, as if in a pure cultivation, a great quantity of very small bacteria. Closer observation with more powerful glasses showed that here a little delicate bacillus had to be dealt with, a bacillus whose body contained a more easily tinged nucleus. For this purpose the usual aniline colours are quite suitable. No bacilli were found in the sub-chorial œdema.

The cause, therefore, of epizootic abortion is to be sought for in a slow inflammation of the uterus, in a specific catarrh produced by a special bacterium. It is undoubtedly a disease of the mucous membrane of the uterus and not of the thin vascular skin, because the exudate contains the detritus of epithelial and pus-cells which can have their origin only in the uterine mucous membrane.

With regard to the fœtus, the most important harm was in the œdema of the external envelopes, which, curiously enough, is nowhere mentioned in literature. In all after-births of aborting cows opportunity has been given of observing this, and in reality the practical veterinarian knows this condition of things quite well, because he will certainly have often noticed, whilst loosening the after-birth of aborting animals, that this after-birth feels slimier, more gelatinous and thicker than in normal cases, and is more difficult to remove—indeed can be removed only in pieces.

Of the uterine fluid three cultures were at once laid out on gelatine serum agar, which forms an excellent soil for such purposes. In two days there began to appear in the first glass, and in four days likewise in the third glass—the second broke—a most abundant growth of little colonies, which came up only within a very limited zone of the re-agency glass, namely ½ cubic centimetre under the surface, to an extent of 1-1½ cubic centimetres; neither above nor below this point were any fungi to be found. We have thus here to do neither with an aerobic bacterium, which grows on the surface, nor with an anaerobic species, which grows only in the depths of the cultivating medium; it rather appears that we have here a quite distinct species of bacterium which has a manner of growth quite different from that of any hitherto-known bacteria. Suppose, for instance, we spread out the uterine secretion on the gelatine serum agar in the glass, and then incline the latter over a bottle of oxygen, taking care that the cultivation-substratum remains fluid, and that the walls are thus coated over with a thin layer, if we then melt the stopper with paraffin, yet the bacteria will flourish even upon the surface of the stiffened medium.

In order to discover if by any chance the carbonic acid of the atmospheric air hindered the growth in the upmost stratum of the gelatine serum agar, Stribolt added 4 to 5 per cent. of carbonic acid to the pure oxygen and let this into the culture-bottle, but in this case also the culture prospered.

Believing thus that the virus of infectious abortion had been discovered, the next thing Professor Bang had to do was to investigate other similar cases. In 21 cases, sometimes after-births or portions thereof, sometimes specimens of the uterine exudate, sometimes aborted fœtuses, were examined, and in all of these the same phenomena as given above could be demonstrated. The uterine secretion had the same appearance, and the envelopes showed always the same œdema. It was further noticed that the chorion was always more or less injected and, as a rule, was distinctly marked with specks of pus and slimy uterine secretion. In the uterine secretion it was always quite easy to find abortion-bacilli in great numbers, sometimes free, sometimes lying in great heaps, often enclosed in bigger cells.

The following case is very interesting :—On the 16th March, 1896, a four-and-a-half-year-old cow was dissected in the slaughterhouse. She had calved for the first time in October, 1893, then aborted in September, 1894, about two months before her time, and then remained apparently sterile. In the uterus, however, there was found a mummified calf, tightly enclosed in the fœtal envelopes. Between these and the uterus one could see a great quantity of brownish viscous exudate. "I knew," goes on Professor Bang, "that the plague of abortion was raging on the estate from which this victim had come and on which she had been born. I therefore took specimens of this viscous mass, and made cultivations on gelatine serum agar, and I got a splendid pure cultivation of abortion-bacilli, which developed, it is true, very slowly, but in the course of nine days presented a lovely picture. The process does not, therefore, necessitate the expulsion of the fœtus."

This case shows the enormous tenacity of life in the bacilli of abortion. The cow had probably been impregnated in December, 1894, or January, 1895 —the calf was, to judge by its development, some five months old when it died—so that the bacilli had been shut up some nine to ten monthsin the uterus when they were utilised for the cultivation.

In order further to test his cultivations, Professor Bang made an arrangement with a butcher for the loan of cows for purposes of inoculation. Two cows were inoculated artificially by placing fragments of abortive after-births in the vagina ; they were slaughtered 33 and 35 days after, but not the slightest lesion was found in their generative parts. An attempt to introduce a bouillon-culture through the cervix, between uterus and fœtus, by means of a glass tube, likewise failed, as it produced, five days afterwards, violent septic inflammation of the uterus, on account of which the cow had to be killed. Two cows were now obtained from a herd in which it was well known that epizootic abortion was *not* raging. Both were advanced three months in pregnancy. On the 14th April a large quantity of pure cultivation, partly of glycerine-bouillon, partly of gelatine serum agar, was introduced, with the help of a glass pipette, far into the vagina. When, however, in the middle of May, no suspicious appearance was to be noticed in either of the animals, Professor Bang, fearing that his first attempt had miscarried, determined to inoculate a second time ; this took place on 23rd May and again on 4th June. At length, on the 23rd June, one of the cows, a seven-year old, showed distinct relaxation of the pelvic ligaments, œdema in the labia of the vulva, and slight viscous flow from the vagina. The other cow (four years old) showed, on the same day, slight œdema in the labia, but no relaxation of the pelvic ligaments. Although one might have surmised from the symptoms that the seven-year old would abort first, the other cow aborted on the very morning of the 24th of June ; the calf was five months old, and evidently had been dead only a few days. Under the chorion there was found severe œdema, the vessels of the chorion were greatly injected, the cotyledons were of a dirty yellow colour, and on the villi of the chorion lay a dull, flaky, viscous, purulent exudate ; the same exudate was still flowing in moderate quantity from the

uterus. In this exudate were found the above described abortion-bacilli; but, although the examination took place some six hours after the abortion, already other germs were to be found—a great number of micrococci. The culture became impure for this reason, and yet the culture of the abortion-bacilli in gelatine serum agar succeeded very nicely.

The second cow was killed on the 24th of June. The calf was quite fresh and had undoubtedly been still alive when the mother was slaughtered. In the exudate between the chorion and the uterine mucous membrane, there were again found the abortion-bacilli, and from these Professor Bang laid out beautiful pure cultures. There was thus incontrovertible proof that the abortion-bacilli so found were really the cause of the abortion, and that abortion could be produced by introduction of these bacilli into the vagina. On the other hand, the experiment gave no definite information as to the period of incubation, seeing that the cows had been thrice inoculated; still, it is more than probable that the first inoculation would have been sufficient, and that the period of incubation is ten weeks.

Now that it is known that the origin of the disease is bacterial, the task set before us is to discover whether immunity can be produced by serum-treatment or not. As the disease belongs to the class which leave natural immunity behind them, the hope seems justified that the therapeutics of the future will arrive at a satisfactory solution of this question as of others.—*Maanedsskrift for Dyrlaeger.*

A GERMAN LANDED PROPRIETOR'S EXPERIMENTS IN INOCULATION AGAINST ERYSIPELAS IN SWINE.

(Contributed to the *Deutsche Landwirtsch. Presse*, and quoted by Dr. Malkmus, Editor of the *Deutsche Thier. Wochenschrift*).

I had, on the 27th of May, 100 pigs of different ages subcutaneously inoculated with "porcosan." All the animals inoculated showed swellings about the size of a pigeon's egg at the place of inoculation, and a decreased appetite, and were all in a feverish condition. Shortly after the inoculation, a young boar-pig showed great lassitude, let its ears and tail hang, did not eat, rolled itself in the straw and suffered from severe constipation. On the 29th of May the animal died, groaning and gasping for breath, after the inoculated place had turned of a blue-red colour. On the next day another yearling hog died, showing the same symptoms. Still later, on the 30th of June, three more yearlings died; the blood of two of them was sent to Professor Schütz, in Berlin, who demonstrated the presence of the bacilli of erysipelas.

On the 13th of June 145 pigs were inoculated; the same symptoms appeared in them all, only the decrease in appetite did not last so long. On the 15th of June three yearlings died, and on the 25th of June one hog. A few days after the inoculation its body had become covered with red spots. It walked stiffly and staggered about, lost all its usual voracity, and suffered from costiveness.

For the third time, on the 27th of August, 200 pigs were inoculated; only swellings the size of hazel nuts appeared at the places inoculated, and these disappeared in three days.

The first two times the porcosan consisted of a dark brown, muddy, gluey substance, while the third consignment had a much brighter and a thinner, and more liquid appearance.

Thus five of the 445 animals died a few days after inoculation, and four died a week or two after inoculation. Greater importance would be attached to the inoculation if all the animals that died had been subjected to a thorough medical examination. It cannot be considered as proved that the pigs—with the exception of those two examined by Professor Schütz—died of erysipelas.

Two of the inoculated animals were shut up in a pen with pigs suffering from erysipelas, remained there for several weeks, ate the blood and flesh of dead swine, and still remained healthy. Pure cultivations of erysipelas-bacilli, received from Dr. Lorenz, were injected into two out of every three swine sent for inoculation, and these pigs also remained sound. From this it must be concluded that inoculation with porcosan has bestowed immunity on the inoculated animals against erysipelas.

PORCOSAN.

(A French view of the same question.)

For some time past a product has been selling in Germany under the name of "Porcosan," which is made in a dye-works in Mannheim. It has, according to those who sing its praises and sell it, the property of conferring immunity against erysipelas in pigs. As this product has given unfavourable results in certain cases, or else has not acted at all, the Minister of Agriculture in Prussia has ordered the technical section of veterinarians to prepare a report for him on the efficacy of porcosan.

The result of their investigation shows that the product is a cultivation of the bacilli of erysipelas added to a chemical preparation in order to attenuate the effects. It is analogous to the vaccine of Pasteur in its composition and its effects; it presents the same inconveniences as the latter. If the attenuation is pushed too far, it does not confer immunity; if not far enough, it kills the animals which it claims to protect. There is then no reason to advise the employment of porcosan. The Minister of Agriculture is even of opinion that he ought to forbid it. In fact, to inoculate animals with this vaccine, which often kills them, is only helping to spread contamination—is only propagating the causes of the evil. The general conclusion of the Minister is that agriculturists should be put on their guard against the employment of this pretended remedy. That is a very wise thought and an equally wise act. One can only regret that inquiries of this sort are not more frequent in France as well as in Germany.

We must bear in mind that the mass of the public are wanting in culture, in ability, and often in intelligence, and that the imprudent and lying advertising which is going on on all sides as to remedies, treatments, and foods—for all things that we eat, drink, and consume—has no other end than to deceive the public, and to cause it to regard that which is bad as good, and as useful that which is useless and harmful. Not that we can hope to improve professional morality much; that must be left to the moralists; but we can protect the ignorant from their own ignorance, and put impostors in their proper place. But that will, unfortunately, be a very difficult job.—*Revue Scientifique.*

ON THE SUSCEPTIBILITY OF CATTLE TO MERCURIAL PREPARATIONS.

It is currently admitted in veterinary medicine, and regarded as a settled matter, that ruminants, and especially oxen, are extremely sensitive to the action of mercurial preparations. This belief in the susceptibility to mercurial poisoning on the part of cattle is based on the number of accidents resulting from the use of double mercurial ointment for cutaneous friction. These accidents have not only caused the restriction within very narrow limits of the external use of mercury in bovine therapeutics as a solvent, but they have likewise caused the almost complete exclusion, in cases of puerperal septicæmia, of antiseptic solutions, with a basis of sublimate for the washing of the uterus. Tabourin says, "Although all practitioners are at one regarding the terrible effects of mercurial preparations on ruminants, they are far from being so regarding the dose necessary to produce mercurial infection.

According to the Belgian surgeons, we may almost with impunity rub mercurial ointment on the abdomen of cows affected with metroperitonitis; according to the surgeons of southern France, a very small quantity—15 grammes (1 gramme = 15½ grains) for instance—may produce very serious results. M. Lafosse, with the object of establishing rules on this point, tried several experiments on the greater ruminants. He applied double mercurial ointment, rubbing it vigorously on the withers, and tying up the animal in such a way that it could not lick itself; with a dose of from 32 to 64 grammes, the ointment produced no other effect than pretty severe local inflammation; with a dose of 100 grammes, there supervened general trembling, which lasted eight days, and indicated the beginning of infection. In spite of these experiments the question remains unsettled, and it will never be settled satisfactorily as long as we fail to note the varying circumstances which may influence results, such as the "age" of the preparation, the dose, the general condition of the subject, the state of the skin to which we have applied the ointment, the way in which the animals have been tied up, the atmospheric temperature, and so on." This was written in 1849, but up to the present day we have made little progress; it is always with much searching of heart, almost with fear, that surgeons employ mercury in the treatment of cattle. It appears to me that this fear of using mercury is exaggerated, and whilst I admit the necessity of great caution, I cannot admit that oxen show more susceptibility to mercurial poisoning than our other domestic animals. I have been fifteen years in practice, and I have constantly employed double mercurial ointment for rubbing on the skin of milch-cows shut up in their byres nearly all the year; and have never observed any hydrargyrism even in the benignant form.

I use it (*a*) as a maturative for abscesses of all sorts, the dose being 30, 40, and 50 grammes for a single application; (*b*) as a solvent (same dose) in chronic swellings of insolvent type; (*c*) as a solvent and antiseptic (same dose) in cases of acute mammitis (always of infectious origin in the cow); in these cases it succeeds very well, in the same doses as above, applied on two occasions with an interval of 24 hours, and again (very often) several days later. During these years I have frequently employed mercury always without accident of any consequence, for intra-uterine injections in the case of cows affected with catarrhal metritis and for this reason sterile. I employ solutions of corrosive sublimate of 1 per 1,000: these injections are repeated two or three times a day, in doses of one litre each time, for more than a week. Besides this I have frequently had recourse to mercurial blistering ointment (equal parts of blistering ointment and double mercurial ointment) in cases of acute affections of the lungs; I have it rubbed vigorously on the side of the breast, in doses of 50 to 100 grammes, sometimes repeated after an interval of 24 or 48 hours. I have never in these cases observed any sign of mercurialism.

At the instigation of M. Weber I tried an experiment which shows how greatly our fears of mercurial poisoning are exaggerated. On 7th September last a cow, eight years old, was sent to me for this purpose; she was tuberculous, emaciated, phthisical in the true sense of the word; she coughed without ceasing, ate hardly anything and seemed in the last stage of tuberculosis. On the 8th at noon respiration was 36, pulsations 90, temperature 39·8 cent. (103° Fahr.) I cut off with a clipper all the hair from the left side of the neck, withers, back, loins and croup. I had these parts thus denuded of hair, thoroughly brushed and then I applied by friction 40 grammes of double mercurial ointment. This friction went on for ten minutes with the help of a plug of woollen material. On the ninth I applied 85 grammes. On the tenth, with a piece of brick I rubbed the same parts vigorously over, my object being to irritate the skin still further and deprive it of its epidermis; I then applied 50 grammes, rubbing for ten minutes. On the 11th September

at noon respiration was 46, pulse 85, temperature 40° Cent. (103·8 Fahr.), the skin was to a great extent depilated, red and painful, there was a little diarrhœa and considerable thirst. The teat which on the seventh furnished several wine-glassfuls of milk furnished still nearly the same quantity. A further rubbing with 75 grammes was performed. lasting for ten minutes, and a quantity of the ointment was applied to the internal surface of the thighs, On the 12th respiration was 46, pulse 88, temperature 40°. On the 13th respiration was 54, pulse 90, temperature 39·4, a little salivation. On the 14th respiration was 50, pulse 90, temperature 39·6, with continued salivation, but no redness or swelling of the gums. Diarrhœa returned. On the 15th at noon salivation seemed to have diminished. The hypersecreted saliva, instead of falling drop by drop from the commissure of the lips and being clear and liquid as before, had become frothy and clung to the lips. The gums were normal, diarrhœa had disappeared, teats still gave a little milk—in short, the general symptoms of mercurial infection which had begnn to show themselves were now beginning to disappear. On the 16th the general condition not having changed, the animal was slaughtered.

Thus, then, 250 grammes of double mercurial ointment has actually been applied by cutaneous friction within four days to a cow exhausted by tuberculosis, and had produced no other symptom than a little salivation—the influence on respiration, pulse and temperature being very slight. The conclusion to be drawn from the experiment is that we may safely apply mercurial remedies to cattle, provided we do not neglect the precautions necessary in the use of very powerful medicaments. I may state that the ointment employed by me in this experiment was prepared on 20th August last, as follows: complete disappearance of the mercury by means of a mercurial divider (tincture of benzoin and lanoline) and of a little lard, by trituration with a pestle (*bistortier*), for several hours, then addition of the rest of the lard. It was composed of an equal mixture of lard and mercury.—(Adrien Lucet in the *Recueil de Méd. Vétérinaire.*)

Notes and News.

Scottish Chamber of Agriculture.—A meeting of the directors of the Scottish Chamber of Agriculture was held yesterday at 52, Hanover Street, Edinburgh, Mr. George Prentice, Strathore, presiding. At the outset reference was made to the death of Mr. Hugh Elder, a previous president of the Chamber. The Secretary submitted a letter from the Board of Agriculture with regard to swine fever. He stated that the Chamber had communicated with the Board inquiring whether, in the event of the Board ordering the slaughter of animals supposed to be affected with swine fever, and thereafter found not to be so affected, full compensation would in these circumstances be paid. The reply from the Board was to the effect that whenever pigs were slaughtered by order of the veterinary surgeons employed by them when swine fever was reported, full value was given when the slaughtered animal was found not to have been affected, and half value when it was affected. It was agreed to suggest to the Board that any Authority having authority to order slaughter should be in a position to pay compensation. A letter was read from the secretary of the Tuberculosis Commission stating that evidence would be taken about the middle of April. It was agreed that Sir Thomas Gibson Carmichael and Mr. John Dobie, Campend, should represent the Chamber before the Commission. In connection with the giving of evidence, the secretary submitted reports from Edinburgh, Glasgow, Aberdeen, and Kirkcaldy dealing with the proportion of tubercular cattle to the total number slaughtered. In Edinburgh, during the year ending 1s August, 1896,

there were slaughtered 30,156 cattle, 6,302 calves, 185,237 sheep, and 6,858 swine—total, 228,553. The numbers affected with tuberculosis and slaughtered were—137 cows, 7 bullocks, 7 heifers, 1 bull—total, 152; and 12 pigs. This was equal to 1 per cent. of the whole cattle slaughtered. In Glasgow, during the year ending May, 1896, there were slaughtered 30,554 oxen, 2,537 calves, 211,908 sheep, 51,601 lambs, 54,878 pigs, and 28 goats—total, 351,506. Of these 578 oxen were condemned, being equal to about 2 per cent., or double the rate in Edinburgh. Those figures did not include foreign animals slaughtered at the port of landing. In Aberdeen the proportion of condemned animals was ¾ per cent. The Sanitary Inspector of Aberdeen also wrote a letter stating that the system of inspection in Aberdeen was defective, and if there was a larger staff it would, no doubt, be found that the number of tubercular carcases was greater. The Chairman said the statements pointed to the necessity of clearing-houses. He thought that any authorised slaughter-house should be authorised to take in dead meat for inspection, and upon its being passed through, the owners or those sending it in should be cleared of all responsibility. It was agreed that this should be a recommendation of the Chamber to the Commission on Tuberculosis. On consideration of the Public Health Bill it was resolved to object to the proposed assessment upon one quarter of the value of the land as it involved a payment of one-eighth more than under the present law. This was all the business.—*Glasgow Herald*, Thursday, February 11th.

Professor Koch's Work in South Africa.—Professor Koch's investigation of the cattle plague in South Africa forms the subject of a recent article in the *Norddeutsche Allgemeine Zeitung*. One of the first places which he visited after arriving in the colony was the leper asylum on Robben Island in Table Bay, and he is said to have expressed his satisfaction with the general arrangements of the establishment as well as with the bacteriological work accomplished in the laboratory. The party included representatives of the Colonial Government, the German Consul-General, and several medical men. On December 3rd he left for Kimberley, where the principal part of the work of investigating the cattle plague will be undertaken. He was accompanied by his assistant, Dr. Kohlstock, and also by Dr. Turner, a medical officer of the Colonial Government. It was arranged that a laboratory should be fitted up at a farmhouse about two miles from the town, and whilst the requisite alterations were being made Professor Koch went to Taungs, a town in the Kaffir country about 200 miles from Kimberley, where more than 20,000 head of cattle have died from the epidemic, so that there was abundant opportunity of observing the disease, of performing necropsies, and of collecting morbid specimens. On December 8th the party returned to Kimberley, where the laboratory was then in working order, and eight animals were inoculated with infective material brought from Taungs. The inoculations were made in the mouth and nose, every precaution being taken to insure isolation and to guard against any accidental extension of the disease in the Kimberley district. One of the inoculated animals very soon died with symptoms of cattle plague, and the pathogenic material obtained from it was used for the inoculation of a fresh series. Professor Koch is very pleased with the arrangements which have been made by the colonial authorities for facilitating his researches, and finds that everything has been done to render his visit agreeable. The foregoing particulars have only appeared in an ordinary newspaper; a far more detailed and satisfactory account of the cattle plague inquiry will no doubt be communicated to the medical press on the return of Professor Koch and his assistants. The German Government is said to have requested him to visit Bombay for the purpose of investigating the bubonic plague,—*The Lancet*, February 13th, 1897.

THE PATHOGENIC ACTION OF THE MICRO-ORGANISMS OF FRIEDLANDER AND FRAENKEL.—Fleroff (*Th. de Moscou*, 1896), points that before the discovery of the Talamon-Fraenkel pneumococcus, Friedlander described a bacillus which for a long time was considered to be the agent of pneumonia. More recently this rôle has been given exclusively to the pneumococcus of Fraenkel, although the latter is found as a saprophyte in the mouth, and though in many cases of pneumonia it has been impossible to prove its presence. This investigator has made experiments with a view to determining the real pathogenic importance of these two microbes, and has found that while either of them may cause pneumonia, septicemia, or extra-pulmonary trouble, the pneumococcus seems to be more toxic, but that its presence in the expectoration is not pathognomonic. He concludes that neither of the two microbes ought to be considered the specific agent of pneumonia.

Reviews.

ANNUAL REPORT OF THE CATTLE COMMISSIONERS OF THE COMMONWEALTH OF MASSACHUSETTS, 1897.

The investigations of the Cattle Commission of Massachusetts are published in the form of a public document, covering 74 pages. It gives the number of cattle assessed in each district of the Commonwealth, the amounts awarded as compensation, the number of cattle condemned, and the number tested for tuberculosis. A glance at these shows at once that the work done has not been a light one, the cattle in more than 350 cities or towns having been tested for tuberculosis. There were 8,969 animals suspected of being tuberculous, and tested with tuberculin, and out of these 4,694 were condemned and destroyed.

In addition to this, 1,178,071 animals—cattle, sheep and swine—were examined at various slaughterhouses, and out of this number the carcases of 482, or ·46 per cent. of cattle, and 91, or ·0117 per cent. of swine were found tuberculous, the sheep being free.

In addition to this work, the Commissioners inspected 24,161 stables, and found 56 per cent. in good, 36 per cent. in fair, and 8 per cent. in bad condition. Then notice is taken of the position of wells, drains, manure heaps, etc., and the sources of contamination examined and illustrated.

There are many other details in connection with hygiene and prophylaxis of very great value, but into which space will not allow me to enter.

Glanders.—384 horses were reported as being suspected of being glandered, and out of this number 341 were condemned as being diseased, or killed at the request of the owners, and the Board expresses the opinion that "it is quite practicable to largely reduce the disease, as local inspectors and boards of health become better acquainted with their duties, and come to a full appreciation of the importance of active observance of the law in regard to the reporting of cases. Much can also be done to restrict the disease if reasonable precautions are observed by owners. The watering of horses at public troughs, the hitching to public posts, and stabling in places of doubtful safety, are all ready means of transmitting infection."

Regulations are imposed for the purpose of preventing, extirpating, and suppressing contagious diseases, and these regulations have been applied for the prevention, etc., of rabies, of which disease 16 cases were reported during the year. Remarkable to relate, these 16 cases were spread over 16 towns. This speaks volumes for the activity of the inspectors.

Hog Cholera and *Swine Plague* are still considered, and correctly so, notwithstanding attempts to prove the contrary, are two similar but distinct diseases, the *post-mortem* differences being as follows:—

Hog Cholera.—(1) Hæmorrhages, particularly in the subcutaneous, submucous, and subserous connective tissues: in the various lymphatic glands, and in the various organs of the body. (2) Ulceration of the large intestines. (3) Collapse of lung tissue, and, less frequently, bronchopneumonia.

Swine Plague.—(1) Inflammation of the lungs, numerous small necrotic points in these organs, or a few large cheesy masses. (2) Inflammation of serous membrane, with fibrinous deposits. (3) Congestion of the mucous membrane of the intestine, or inflammation of the same with fibrinous deposits.

Then we have a formula for the treatment of the disease, recommended by Salmon, a very complicated affair, I must confess. It consists of "wood charcoal, 1 lb.; sulphur, 1 lb.; sodium chloride. 2 lbs.; sodium bicarbonate, 2 lbs.; sodium hyposulphite, 2 lbs.; sodium sulphate, 1 lb.; and black antimony, 1 lb., all completely pulverised and thoroughly mixed, and a large tablespoonful for each two hundredweight of hogs to be treated, and it should only be given once a day." If, however, the above is not exactly chemically correct, one need not be too critical if the results are satisfactory.

Experiments were tried to inoculate hens with tuberculous matter from cattle and pigs, but without any result, and it is pointed out that the bacillus of avian tuberculosis is a variety if not a distinct species from that of the mammal.

Inoculation of calves with pure culture of the human tubercle bacillus. Four calves were inoculated. In three of these there were *post-mortem* evidences of tuberculosis, but in no instances were these changes extensive. The most marked lesions were in the immediate vicinity of the point of inoculation, and there was never a general infection, and the lesions were very minute and onln found by careful search; from these facts the experimentalist Dr. Langdoy Frothingham, concludes that the calves are not apparently particularly susceptible to the human tubercle bacillus. But whether this non-susceptibility is due to a bacillus of diminished virulence for the bovine, or to the age of the animals experimented upon, or to some other cause, further experiments must demonstrate.

Œsophagostoma Columbianum, a small round worm, produces a nodular disease of the intestines in sheep and cattle, in the form of little tumours which may be mistaken for tubercles. They are gritty, and when cut open are found to contain a dry greenish material, which at once distinguishes them from the products of the tubercular bacillus which are yellow, cheesy and calcified.

There are various other matters of more or less interest collected and put together with evident care; the Reporters being entitled to the highest praise.

The work done by American investigators during the last few years cannot fail to command the highest admiration of the scientific world; the care bestowed upon the work, the faithful record of results and the scientific deductions are undoubted evidences of high scientific training.

It is very true that these researches are encouraged by the State, and this ought to put this country to the blush. It is true that a Commission, appointed here some years ago to report upon Tuberculosis was dissolved without arriving at any definite conclusion. Another Commission has been appointed, but so far as I can see we are no nearer a conclusfon than we were before. If this delay gives the opportunity to some witnesses to make up their minds as to what they are going to say, it will serve a good purpose, but Tuberculosis goes on and there is no attempt to arrest it.

Correspondence.

DOCTORS AND DISEASES OF ANIMALS.

SIR,—In a recent issue the *Lancet* published a letter from a sea captain, in which the worthy tar offered to disclose the formula for certain remedies which had proved, in his experience abroad, of great service in cholera and some other diseases.

A note was appended by the Editor in which the old sailor was told to stick to his compass and leave doctoring to those who knew something about such matters. Having served the appropriate sauce to the gander let us hope that the Editor of the *Lancet* may find it consistent with his duty to give a helping to the goose.

Hitherto it was thought by farmers and stockowners that Veterinary Surgeons were the proper persons to be consulted about the ailments of their animals. That, however, is not the opinion of Sir James Sawyer, Physician and Amateur Agriculturist, an individual who has recently been lecturing in Warwickshire on the subject of Tuberculosis and the means proper for its detection and suppression. I wonder whether Sir James is descended from another famous physician the redoubtable Robert Sawyer, Esquire, to wit. There is a certain Pickwickian flavour about the Warwickshire discourse that makes it probable.

Sir James Sawyer is taking a neat way of advertising himself—Bob too had a method of advertising—original and effective, by means of a four ounce bottle of medicine left by mistake at the neighbouring houses. Let us hope that after the Tuberculosis affair has been settled we may get a contribution on the origin of the Hampstead ponds. It will be quite as valuable as the contribution with regard to Tubercle, a perusal or which indicates plainly enough that Sir James Sawyer's knowledge of the Animal Tuberculoses is of the most superficial kind He made mistakes that would infallibly have led to the reflection of a Student at the final Veterinary Examination, telling his hearers that tubercle was common in sheep, that heredity was the principal cause of the spread of Tubercle, that in fact a healthy animal could not take it, and among the methods of detecting the disease, in a herd, made no mention of Tuberculin.

We know what sort of a client a man has who is his own lawyer, we can form too a shrewd guess as to the kind of adviser farmers and others are likely to find who consult Sir James Sawyer on Veterinary matters.

Yours truly,—JONES.

Obituary.

Fisher, H., Whitehaven, Cumberland	May, 1852.
Reid, Robert, Salamander Street, Leith, Edinburgh (Fel. January, 1880)	Jan., 1860.

ERRATA

"Necrotic pneumonia," page 118, third line from foot of page, should read "recurrent pneumonia."

Communications, Books, Journals, etc., Received.

American Veterinary Review; Journal of Comparative Medicine; Australian Farm and Home; Results of Use of Tuberculin, by James Wilson, M.A.; Bacteriological Diagnosis, by St. John Reid; Country Life Illustrated; Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); La Clinica Veterinaria (Milan); Il Nuovo Ercolani (Pisa); La Revista Veterinaria (Buenos Aires); Deutsche Thierärztliche Wochenschrift (Hannover und Karlsruhe).